PS-FL3/FL3C

PS-FL3:
US Model
AEP Model
UK Model
PS-FL3C:
US Model

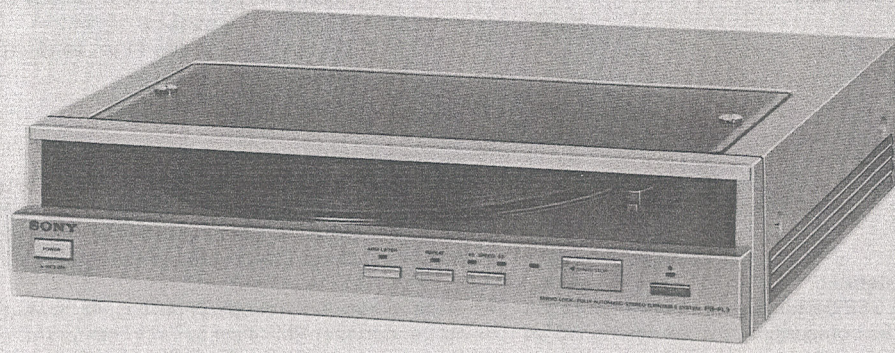


Photo: PS-FL3C

The PS-FL3 (US model) is not supplied with a cartridge, while the PS-FL3 (AEP, UK model) is supplied with a XL-20G cartridge and the PS-FL3C is supplied with a VL-5 cartridge.

STEREO TURNTABLE SYSTEM

SPECIFICATIONS

Turntable

Platter	30 cm (11⅞ in.), aluminum-alloy diecast
Motor	Linear torque BSL (brushless and slotless) motor
Drive system	Direct drive
Control system	Magnedisc servo control system
Speed	33⅓ rpm, 45 rpm
Starting characteristics	Comes to nominal speed within a half revolution (33⅓ rpm)
Wow and flutter	0.02% (WRMS)*, 0.025% (WRMS) ±0.04% (DIN)
Signal-to-noise ratio	78 dB (DIN-B)
Automatic system	Lead-in, return, reject, repeat, record size selection

* This new measuring method concerns only the turntable assembly, including the platter. It excludes wow and flutter caused by the tonearm, the cartridge, or the record. Measured by obtaining signal from magnetic pick-up head.

Tonearm

Type	Statically balanced
Pivot-to-stylus length	216.5 mm (8½ in.)
Overall arm length	280 mm (11⅛ in.)
Overhang	16.5 mm (²¹⁄₃₂ in.)
Tracking error	+3°, −1°
Tracking force adjustment range	0–3.0 g
Cartridge shell weight	5 g
Cartridge weight range (including cartridge shell)	7.5–12.0 g

Cartridge VL-5 (supplied only with the PS-FL3C)

Type	Moving magnet type
Frequency response	10 Hz to 20 kHz
Channel separation	20 dB at 1 kHz
Output voltage	3.5 mV at 1 kHz, 5 cm/sec.
Load impedance	47 to 100 kilohms
Tracking force	1.5 to 2.5 g (2 g recommended)
Stylus	Sony ND-5G (conical 0.6 mil diamond)
Weight	5.0 g

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

— Continued on page 2 —

MICROFILM

SONY®
SERVICE MANUAL

Cartridge XL-20G (Supplied with AEP, UK model.)

Type	Moving magnet type
Frequency response	10 Hz to 30 kHz
Channel separation	25 dB at 1 kHz
Output voltage	3 mV at 1 kHz, 5 cm/sec.
Load impedance	50 to 100 kilohms
Tracking force	1.0 to 2.0 g (1.5 g recommended)
Stylus	Sony ND-200G
Weight	3.4 g

General

Power requirements	US model: 120 V ac, 60 Hz AEP model: 220 V ac, 50/60 Hz UK model: 240 V ac, 50/60 Hz
Power consumption	10 W
Dimensions	Approx. 430 × 110 × 390 mm (w/h/d) ($17 \times 4\frac{3}{8} \times 15\frac{3}{8}$ in.) including projecting parts and controls
Weight	Approx. 10.2 kg (22 lbs 8 oz), net Approx. 12.1 kg (26 lbs 11 oz), in shipping carton

FEATURES

Unique modular turntable system
When you touch the OPEN/CLOSE button the turntable module will smoothly slide out. Other audio components can be positioned on top of the turntable cabinet.

A microprocessor controls three motors
The movement of the turntable, the tonearm and the turntable module is controlled by a microprocessor. When you press the START/STOP button, the module will close, the turntable will rotate and the tonearm will lower onto the record.

Fully automatic system
With the module closed, automatic record play, repeat and stylus up/down are operated by the "feather-touch" function button on the front panel. The record size is automatically set by a photo sensor system. If no record is on the turntable the tonearm will not descend but will automatically return to the arm rest. A muting system activates when the tonearm is lifted and deactivates after the tonearm lowers onto a record so there is no need to turn the amplifier volume down every time a stylus is placed on a record.

Linear torque BSL motor
Direct drive system with Sony's unique BSL (brushless and slotless) motor which has an extremely low noise level, and whose smoothness virtually eliminates wow and flutter. Its high torque assures a quick start to $33\frac{1}{3}$ rpm after only a half revolution.

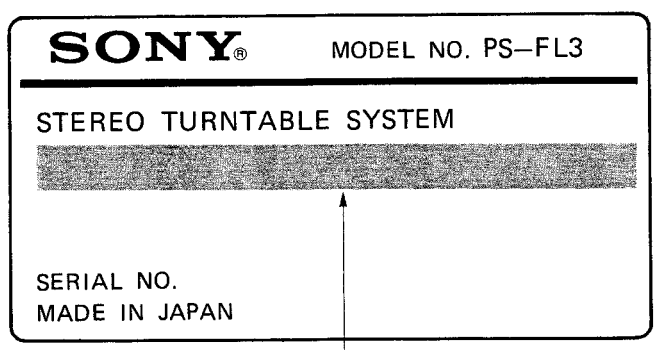
Wireless remote control operation (US, FL3C model)
Using the optional RM-44 system remote controller, various operations—power on/off, start/stop of record play and tonearm up/down—can be remotely controlled.

Tonearm return mechanism triggered by optical sensor
An optical sensor detects the record return point. No mechanical pressure is applied to the stylus so the tonearm can use a very light tracking force.

Synchronized operation with the Sony cassette decks
When the tonearm lowers to the lead-in groove of a record, the cassette deck stand-by mode is released and the record mode assumed.
When play finishes, the cassette deck is automatically set first in the record muting mode, then in the pause mode. This synchronized operation is possible with Sony cassette decks equipped with a four-pin remote control jack which is connected with a Sony RM-65 synchro remote control unit.

MODEL IDENTIFICATION

Specification Label



US model:	AC 120V	60Hz	10W
AEP model:	AC 220V	~ 50/60Hz	10W
UK model:	AC 240V	~ 50/60Hz	10W

LOCATION AND FUNCTION OF CONTROLS

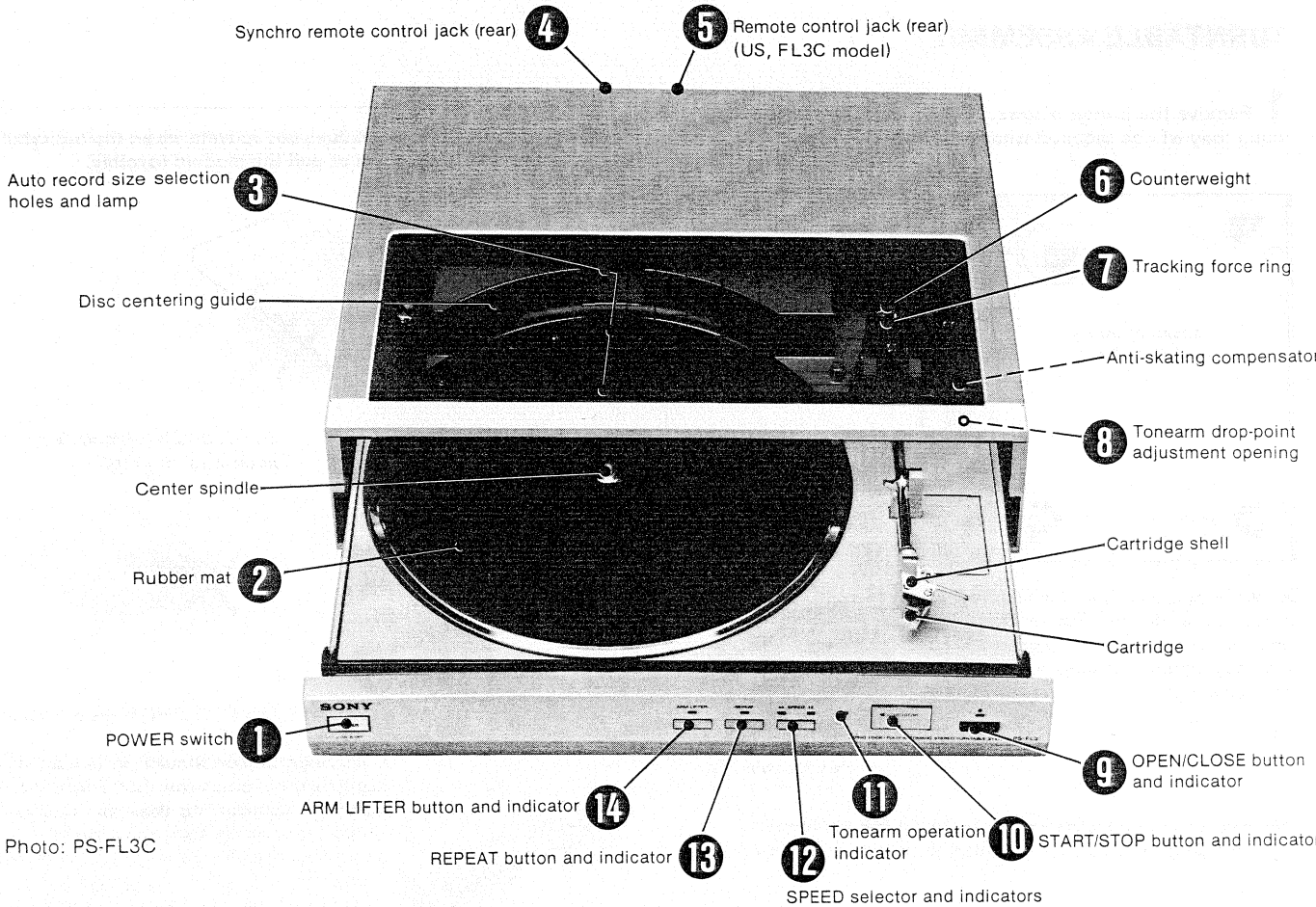


Photo: PS-FL3C

❶ POWER switch
Press to turn on the turntable. To turn the turntable off, press it again.

❷ Rubber mat
Place the rubber mat so that the holes for auto record size selection on the rubber mat and on the platter are matched correctly.

❸ Auto record size selection holes and lamp
Record size is automatically selected by a beam transmitted from a lamp through holes on the rubber mat and the platter to the photo detectors underneath the platter. When no record is on the platter, the tonearm will not lower onto the turntable.

❹ Synchro remote control jack (rear)
Connect the optional RM-65 synchro remote control unit to this jack. (See page 13.)

❺ Remote control jack (rear) . . . (US, FL3C model)
Connect the optional RM-44 system remote controller to this jack. (See page 14.)

❻ Counterweight
Balance the tonearm and apply the required tracking force by adjusting the counterweight. (See page 6.)

❼ Tracking force ring
The tracking force scale is engraved on this ring in 0.1 gram increments.

❽ Tonearm drop-point adjustment opening
Turn the screw in this opening to adjust the auto play tonearm drop-point. (See page 14.)

❾ OPEN/CLOSE button and indicator
With one touch of this button the turntable module automatically opens for loading a disc. With the another touch the module automatically closes.

❿ START/STOP button and indicator
Press to start the record playing. To stop during play, press it again.

⓫ Tonearm operation indicator
The indicator flickers indicating that the tonearm is moving for auto operation. The indicator goes out when the tonearm rests on a record or returns to the arm rest.

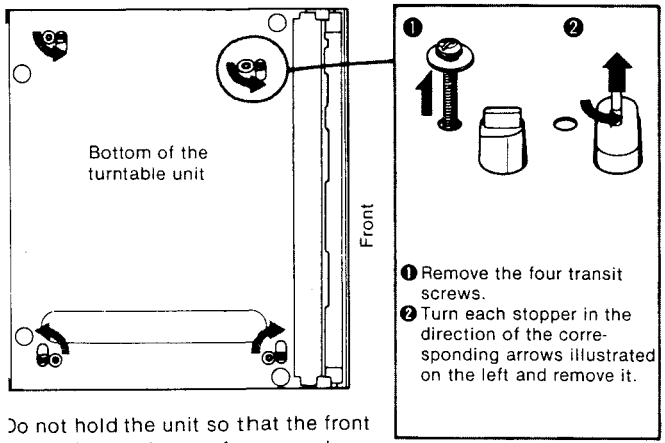
⓬ SPEED selector and indicators
Selects the record speed. The indicator of the selected speed illuminates. When the POWER switch is turned on, the speed is always 33⅓ rpm unless the selector is pressed to select 45 rpm.

⓭ REPEAT button and indicator
Press this button to repeat play. The indicator illuminates and repeat play continues until this button is pressed again to stop it. If the START/STOP button is pressed during repeat play, the tonearm returns to the arm rest and the turntable stops rotating.

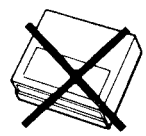
⓮ ARM LIFTER button and indicator
This button lifts and lowers the tonearm. When the tonearm is lowered, the turntable starts rotating. The indicator illuminates when the tonearm is in the up position.

TURNTABLE ASSEMBLY

1 Remove the transit screws. Save these screws and stoppers, since they will be required when repacking.


Bottom of the turntable unit
Front
❶ Remove the four transit screws.
❷ Turn each stopper in the direction of the corresponding arrows illustrated on the left and remove it.

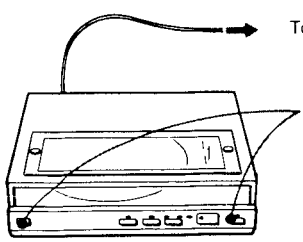
Do not hold the unit so that the front panel faces down after you have removed the transit screws, since this may cause serious damage to the module.



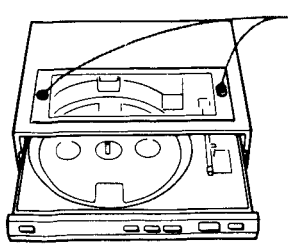
Not this way.

Remove all packing material and wipe off the cabinet.
Save the packing box and materials for possible future use.

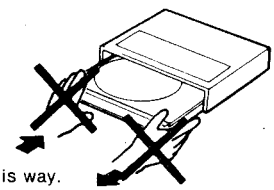
2



3

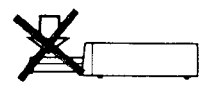


The OPEN/CLOSE button does not activate when the turntable is turned off. Never push or pull the module forcibly.

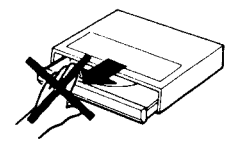


Not this way.

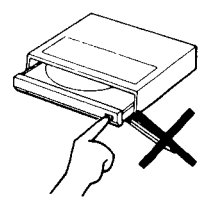
Do not push down on the module.



Do not stop the module when it is moving.



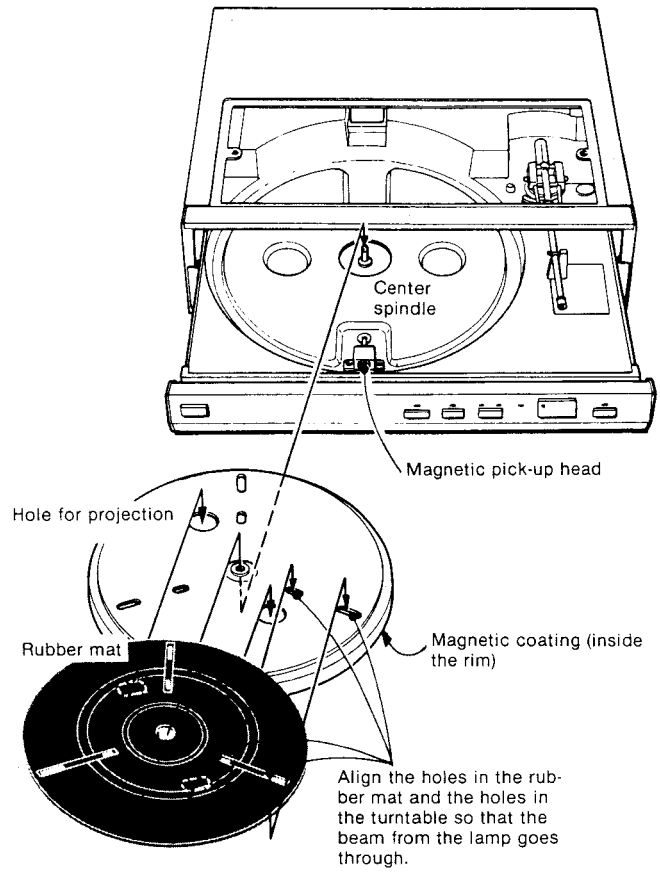
Be careful that no foreign object is caught between the module and the cabinet.



If a foreign object should be caught in this position, press the OPEN/CLOSE button immediately so that the module will move in the opposite direction.
If you leave the foreign object between the module and the cabinet for 15 seconds, the module will automatically move in the opposite direction.

4 Carefully place the platter on the motor board by fitting the center hole over the center spindle. Be careful that no foreign objects lodge under the platter.
● Do not touch the magnetic coating or the magnetic pick-up head.

5 Place the rubber mat on the platter, by matching the projections on the back of the rubber mat to the holes on the platter, and also the holes for record size selection on the rubber mat to those on the platter.
Do not use a rubber mat other than the one supplied.


Center spindle
Magnetic pick-up head
Hole for projection
Rubber mat
Magnetic coating (inside the rim)
Align the holes in the rubber mat and the holes in the turntable so that the beam from the lamp goes through.

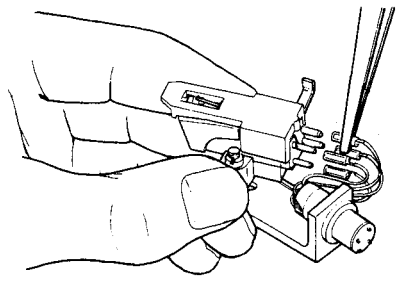
CARTRIDGE INSTALLATION

Notice on the PS-FL3C
The supplied cartridge has been installed correctly on the cartridge shell at the factory. So the following procedures should be skipped unless you replace the cartridge.

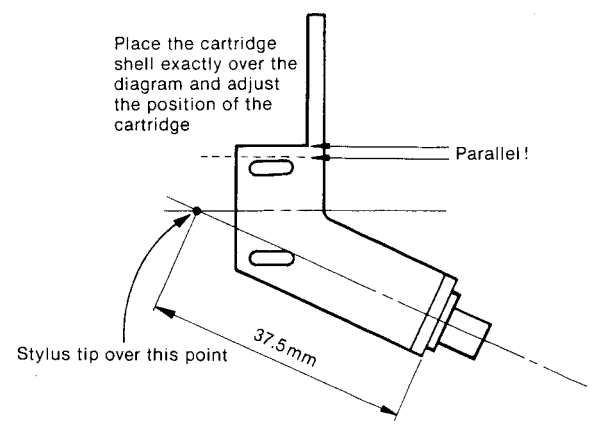
A cartridge weighing from 2.5 to 7 g can be mounted on the supplied cartridge shell (5 g).

1 Connect the lead wires of the shell to the corresponding pins on the cartridge.

Wires	Cartridge pins
White	White, L (Left channel signal)
Blue	Blue, LE or G (Left channel ground)
Red	Red, R (Right channel signal)
Green	Green, RE or G (Right channel ground)



2 Temporarily install the new cartridge into the shell with the mounting screws. Final adjustment should be made later during the overhang check.


Place the cartridge shell exactly over the diagram and adjust the position of the cartridge
Parallel!
Stylus tip over this point
37.5mm

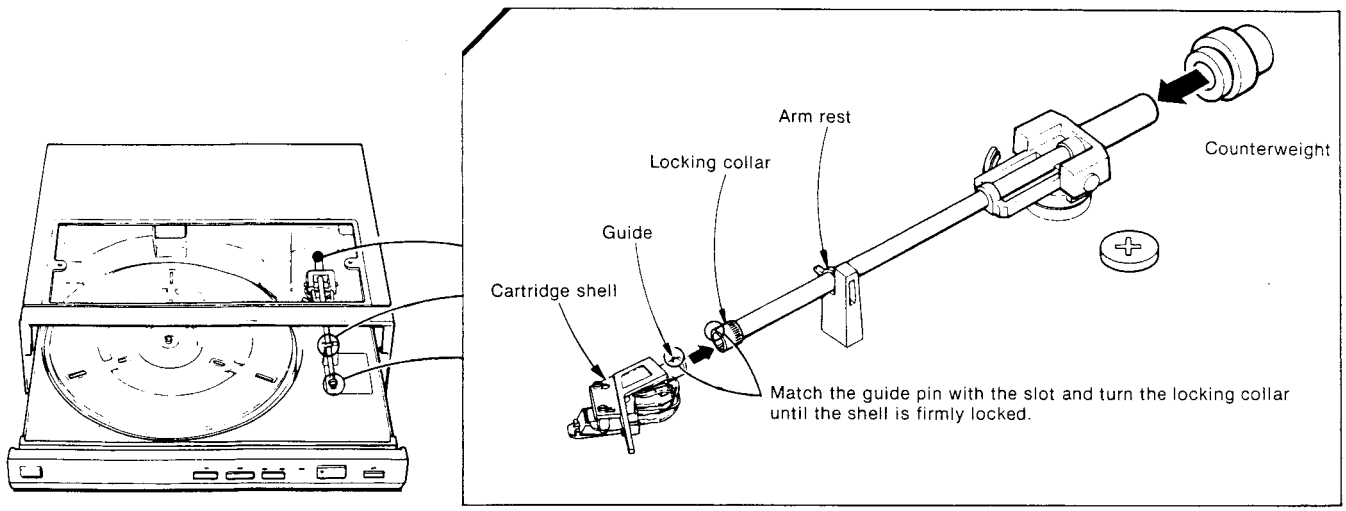
TONEARM ADJUSTMENT

The turntable must be on a level surface while the tonearm is being adjusted.
Be careful not to damage the stylus tip while making adjustments.

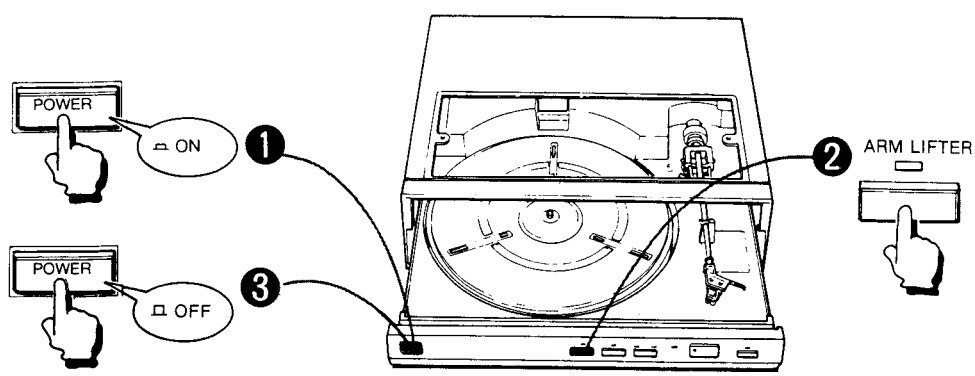
TONEARM BALANCE ADJUSTMENT

It is critically important for good sound reproduction that the stylus traces the record groove accurately and with the proper tracking force.
To do this, the tonearm must first be balanced so that the proper tracking force can be applied.
To balance the tonearm, proceed as follows :

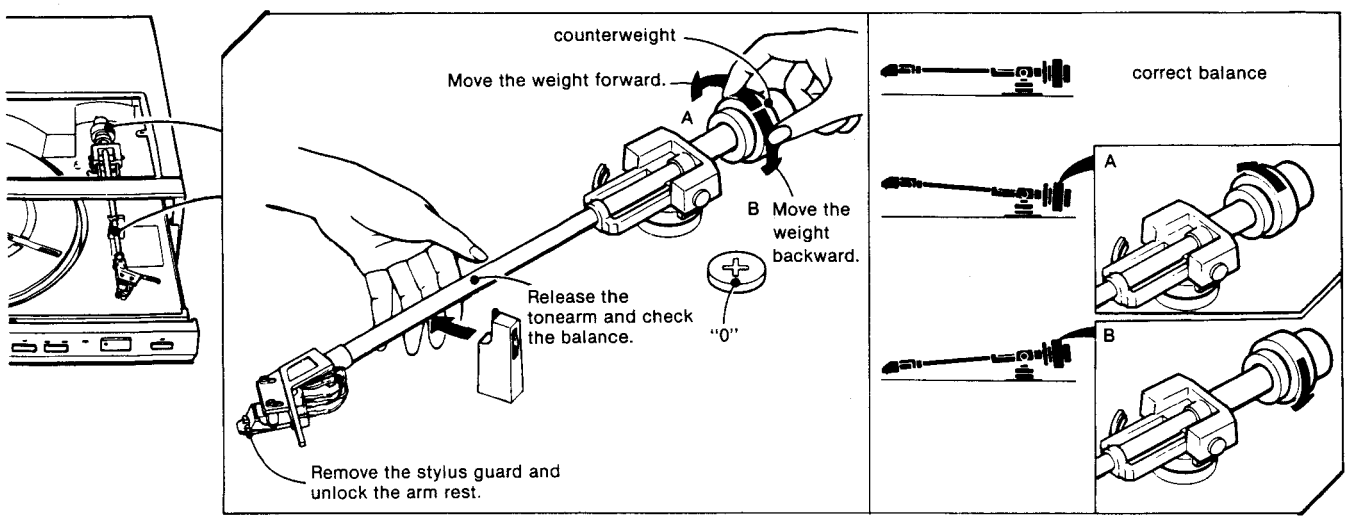
1 Secure the tonearm to the arm rest and insert the counterweight and the cartridge shell.


Arm rest
Locking collar
Counterweight
Guide
Cartridge shell
Match the guide pin with the slot and turn the locking collar until the shell is firmly locked.

2 Press the POWER switch, then the ARM LIFTER button. This will cause the turntable to rotate and the cueing platform to lower. After the cueing platform has lowered, press the POWER switch again to turn the unit off, and stop the turntable by hand.



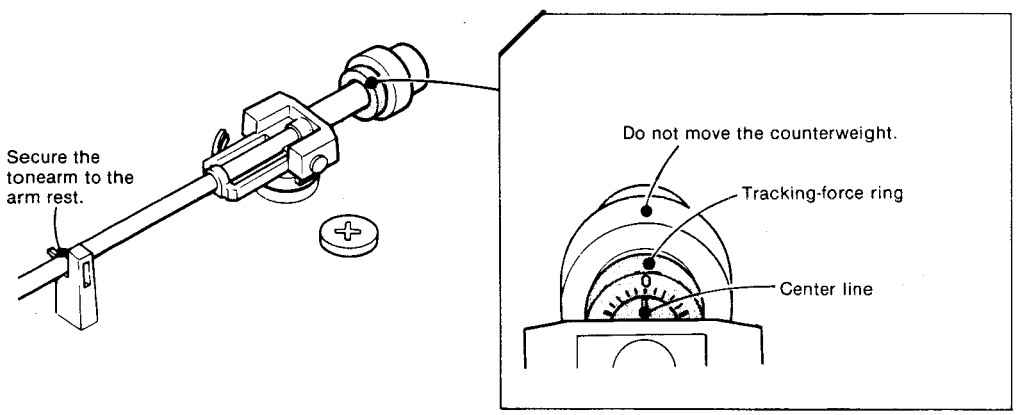
3 Set the anti-skating compensator to "0" and adjust the position of the counterweight by turning it.



Repeat this step until the arm balances.

4 After the tonearm has been balanced, replace the stylus guard and secure the tonearm to its rest.

5 **While making sure that the counterweight remains in the balanced position,**
carefully turn the tracking force ring until the "0" indication is aligned with the center line on the tonearm.

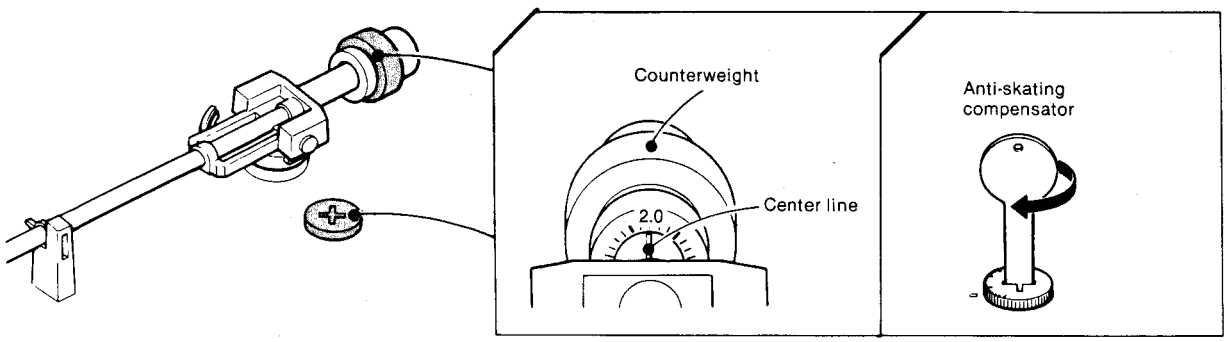


'RACKING FORCE*1 ADJUSTMENT

'urn the counterweight as illustrated so that the recommended tracking force for your cartridge is aligned with the center line on the onearm. The maximum tracking force available is 3.0 grams.

\NTI-SKATING*2 COMPENSATION

'urn the anti-skating compensator so that the guide mark is aligned with the selected tracking force value.



)VERHANG CHECK*3

)heck that the cartridge is correctly installed, using the alignment jauge on the underside of the rubber mat. If the installation is incorrect, the tonearm drop-point during auto play will be incorrect.

❶ Place the rubber mat upside down.
❷ Turn the power on and press the ARM LIFTER button. After the cueing platform has lowered, press the POWER button again to stop the turntable.
❸ Bring the tonearm over the point where the two fine lines cross and carefully lower the stylus to this point.
❹ Check to see that the head shell is parallel to the lines marked on he rubber mat. If it is not, loosen the cartridge mounting screws and slide the cartridge to the required position. Tighten the screws and recheck the balance and tracking-force.

\fter the tonearm adjustment

When the tonearm adjustment is completed, replace the glass plate and secure it with the screws.

***1 Tracking force**

Tracking force is the vertical force applied to the stylus tip so that it can accurately trace a record groove.
The tracking force is applied after the tonearm is balanced.
Since the proper tracking force differs depending on which cartridge is installed, be sure to apply the tracking force recommended for your cartridge. If the tracking force is too light, the stylus will skip grooves. When it is too heavy, the stylus tip and the record will wear excessively. Note that if you play a record at a temperature below 10°C (50°F), or if the record to be played is badly warped, the tracking force should be increased by 20%.

***2 Anti-skating compensator**

While the record is being played, friction between the record groove and the stylus produces a force that tends to drive the tonearm toward the center of the record.
The anti-skating compensator cancels this force. The anti-skating force should be the same value as the tracking force.
Incorrect adjustment of the anti-skating compensator results in sound distortion and uneven wear on both the stylus and the record.

***3 Overhang**

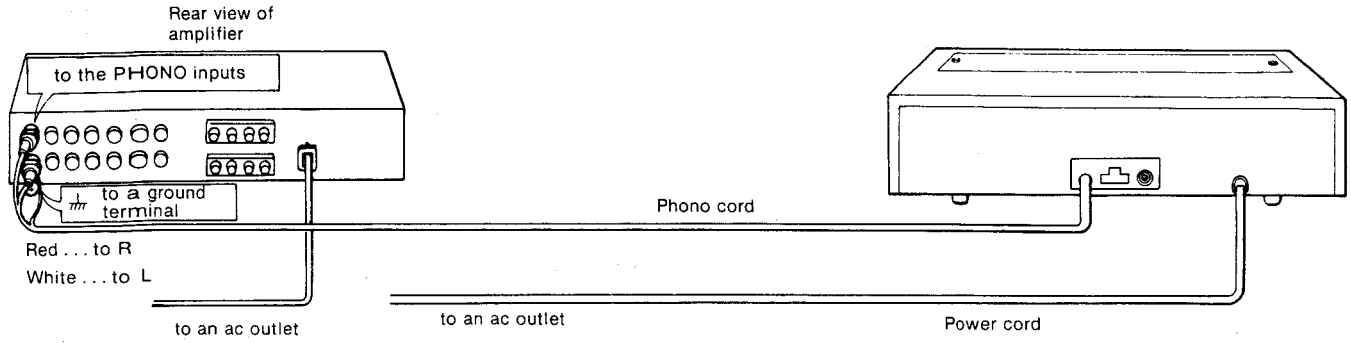
While record grooves are cut by a head which tracks a record's radius in a line, a tonearm, because it is pivoted, traces an arc on a record. To compensate for this difference in movement, the head shell is angled and the cartridge is installed with a 16.5mm overhang. The correct overhang is obtained by installing the cartridge with a 37.5mm space between the stylus tip and the end of the cartridge shell and by checking the installation with the alignment gauge.

CONNECTIONS

- Turn off the amplifier before making connections.
- Be sure to insert the cable connectors firmly into the jacks.

Loose connections may cause hum and noise.

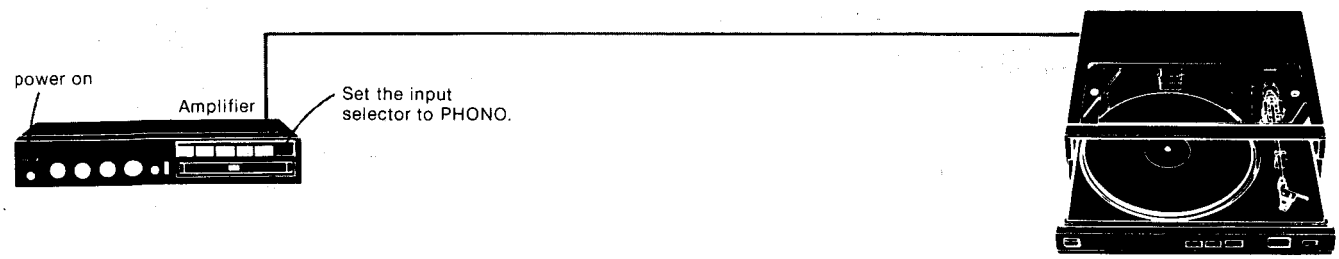
- Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.

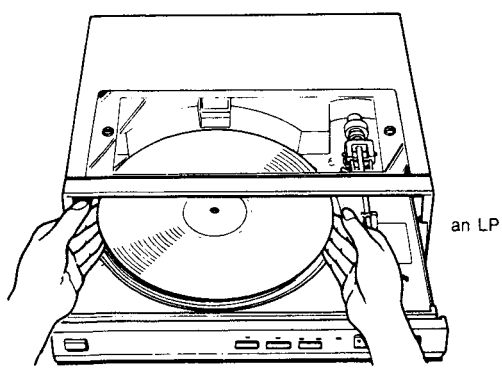

Rear view of amplifier
to the PHONO inputs
to a ground terminal
Red . . . to R
White . . . to L
Phono cord
to an ac outlet
to an ac outlet
Power cord

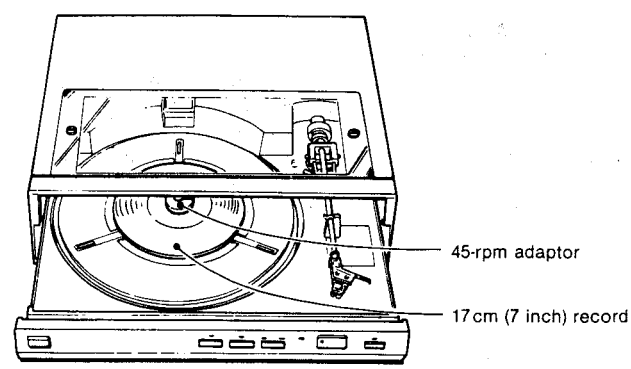
RECORD PLAYING

PREPARATION

- Place a record on the platter. For 17 cm (7 inch) records, put the supplied 45-rpm adaptor over the center spindle.
- Unlock the arm rest latch during operation. After playing, secure the tonearm to the arm rest.





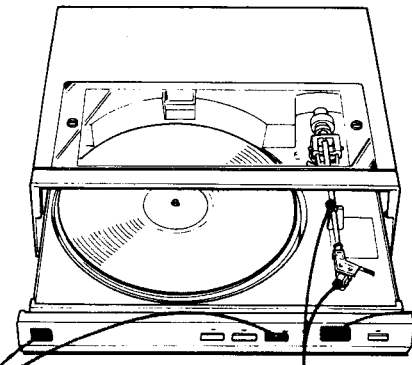


Record

With transparent or badly warped records, the auto record size selection does not operate. In this case, play a record in the following way:

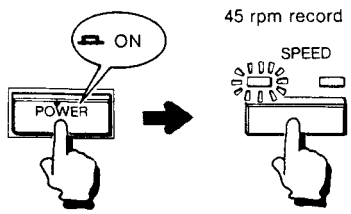
- For 30 cm (12 inch) records, cover the holes for auto record size selection by turning the rubber mat half a circle and play a record.
- For 17 cm (7 inch) records, place the supplied sheet underneath a record to cover the holes and play a record.

TO PLAY



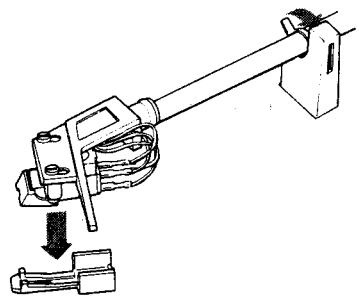
Note
● 25 cm (10 inch) records can't be played automatically. To play these records, bring the tonearm onto a record and then start the playing, following the instructions in "Manual play" on the next page.

❶ Press the POWER switch (ON).

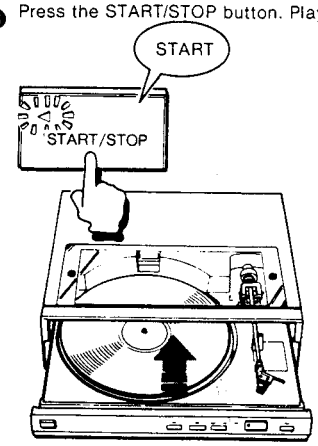


Select the correct record speed. The record speed will always be 33⅓ rpm unless the SPEED selector is pressed to select 45 rpm.

❷ Remove the stylus guard and unlock the arm rest.



❸ Press the START/STOP button. Play will begin.



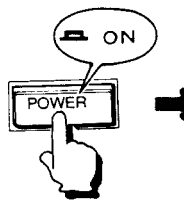
When the tonearm reaches the end of the record, it will automatically return to the arm rest and the turntable will stop.

Notes
Turn off the turntable after the tonearm returns to the arm rest. If the turntable is turned off while the tonearm is returning to the arm rest, when you press the START/STOP button the next time the tonearm will return to the arm rest and the record will not be played. This happens, press the START/STOP button again.
If the turntable rotates at an abnormal speed for some time, such as might happen if you slow it by hand or apply a record cleaner, a safety mechanism may activate to return the tonearm to the arm rest.

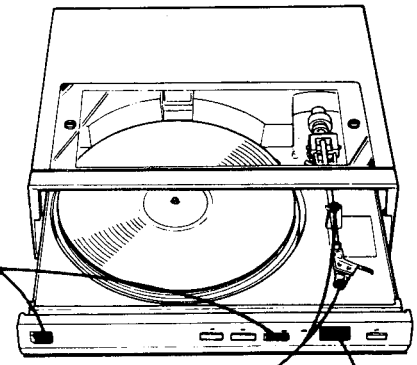
MANUAL PLAY—for playing records at any point

❶ Press the POWER switch (ON).

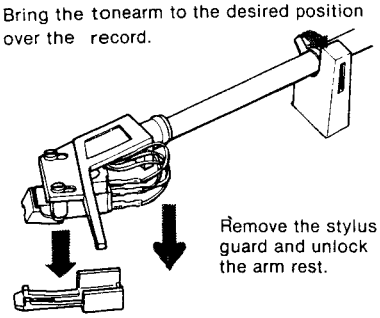
45 rpm record



The record speed will always be 33⅓ rpm unless the SPEED selector is pressed to select 45 rpm.



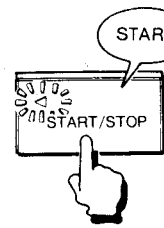
❷ Bring the tonearm to the desired position over the record.



Remove the stylus guard and unlock the arm rest.

or

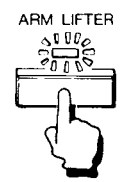
❸ Press the START/STOP button.



The module will close, the tonearm will lower to the record and play will begin.

When the tonearm reaches the end of the record, it will automatically return to the arm rest and the turntable will stop.

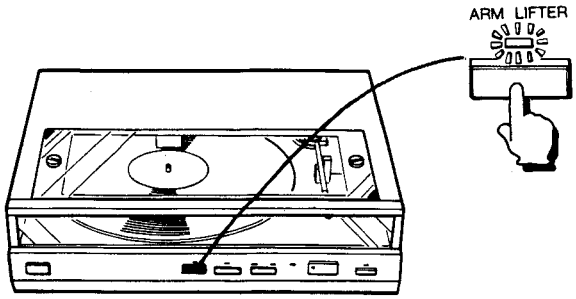
❸ To play with the module opened, press the ARM LIFTER button.



In this case, auto return and repeat may not activate at the end of the groove. Press the START/STOP button to return the tonearm to the arm rest.

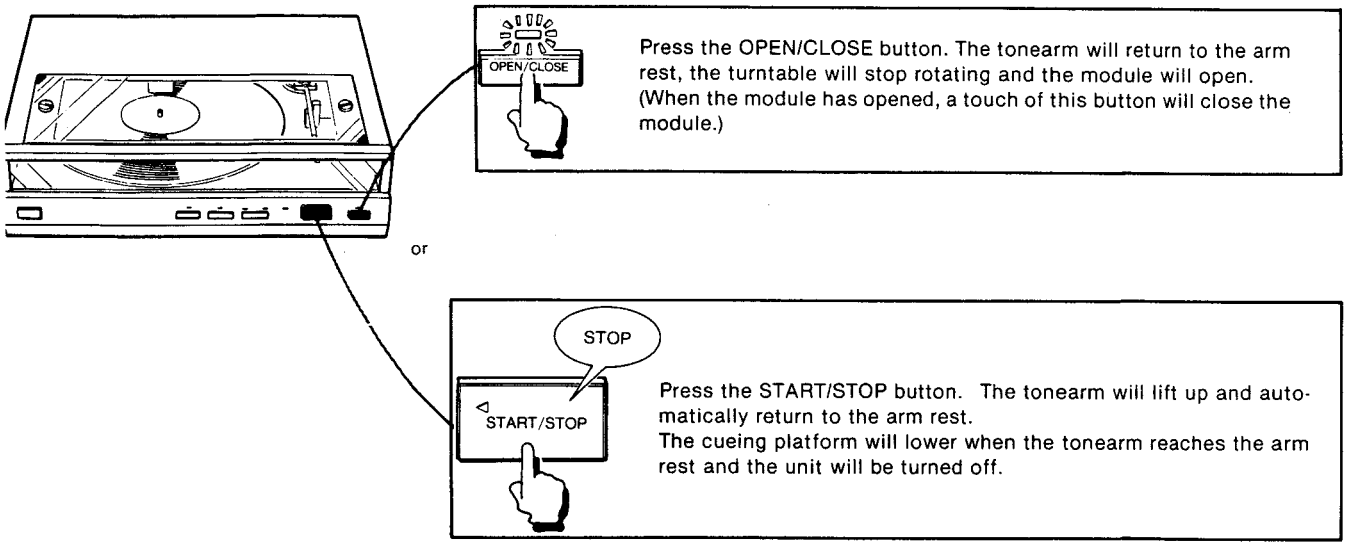
Note
If you lower the tonearm too near the record label, the auto return mechanism may not activate at the end of the groove. This is because the tonearm reaches the end of the record before the auto return detector can activate.

ɔ LIFT UP THE STYLUS DURING PLAY



To lift the stylus from a record for a moment and then start playing from the same point, press the ARM LIFTER button. To lower the tonearm onto the record, press the button again.

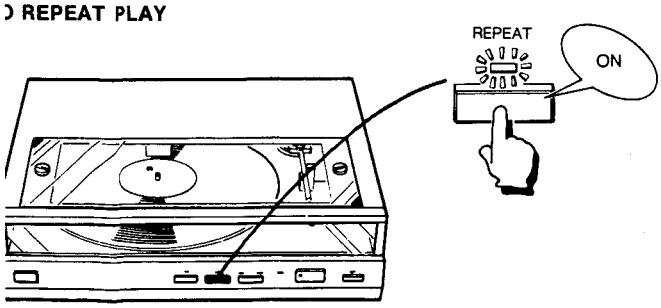
ɔ STOP DURING PLAY



Press the OPEN/CLOSE button. The tonearm will return to the arm rest, the turntable will stop rotating and the module will open. (When the module has opened, a touch of this button will close the module.)

Press the START/STOP button. The tonearm will lift up and automatically return to the arm rest.
The cueing platform will lower when the tonearm reaches the arm rest and the unit will be turned off.

ɔ REPEAT PLAY



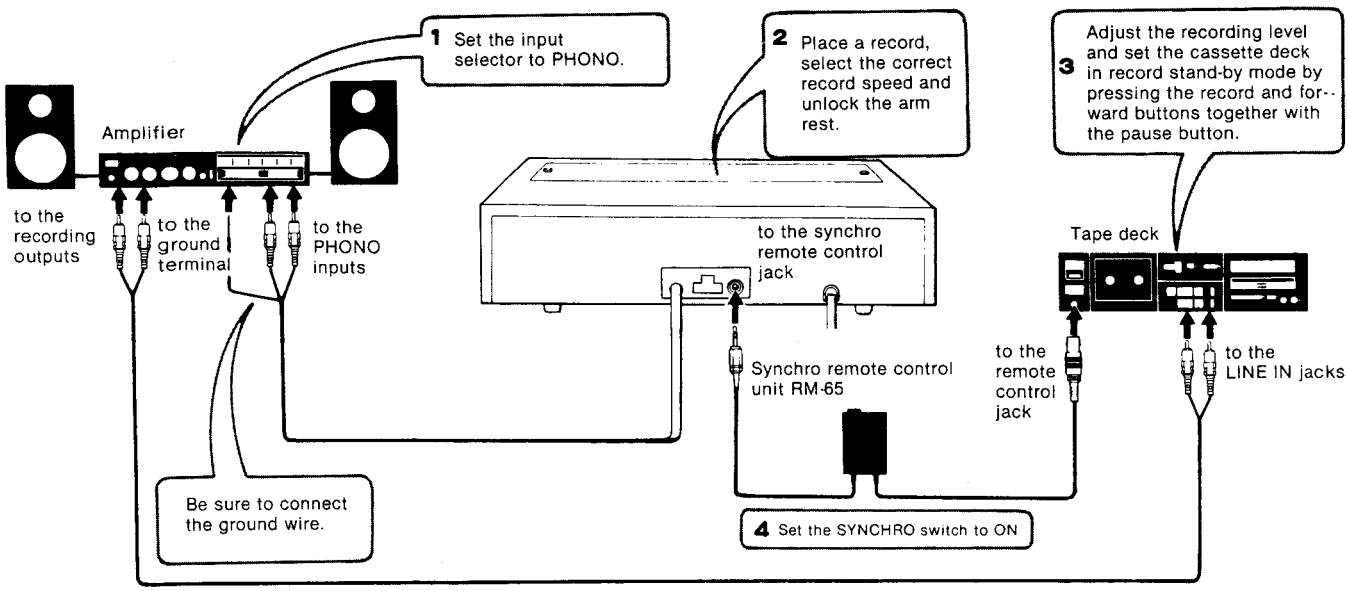
Press the REPEAT button after starting play. The tonearm continues repeat play unless the button is pressed again to turn off the repeat function. To stop during repeat play, press the START/STOP botton.

SYNCHRONIZED PLAY OF THE TURNTABLE AND A CASSETTE DECK

Record recording starts only when the START/STOP button is pressed. When the tonearm lowers onto the record, the tape deck goes into the record mode and, when the tonearm is lifted up, the deck goes into auto record muting mode for four seconds, then into the pause mode.
Connection and operation are as follows:

Cassette decks which can be used with your turntable for this special synchronized operation are those Sony models which are equipped with a 4-pin remote control jack.
An RM-65 synchro remote control unit (optional) is required to connect the turntable and the cassette deck.

Connection and preparation


1 Set the input selector to PHONO.
2 Place a record, select the correct record speed and unlock the arm rest.
3 Adjust the recording level and set the cassette deck in record stand-by mode by pressing the record and forward buttons together with the pause button.
Amplifier
to the recording outputs
to the ground terminal
to the PHONO inputs
to the synchro remote control jack
Tape deck
Synchro remote control unit RM-65
to the remote control jack
to the LINE IN jacks
Be sure to connect the ground wire.
4 Set the SYNCHRO switch to ON

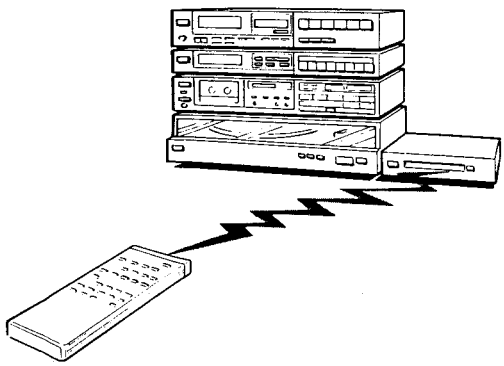
After turning the power of the turntable system on, set the SYNCHRO switch to ON and before turning the power of the turntable system off, set the SYNCHRO switch to OFF.

RECORDING

Desired action	Turntable operation	Synchronized operation of the cassette deck
To record from the beginning of a record...	Press the START/STOP button.	When the tonearm lowers onto the record, the pause mode is released and recording begins.
To record from a point some way into the record...	Bring the tonearm over the desired point and press the START/STOP button.	When the tonearm lowers onto the record, the pause mode is released and recording begins.
To stop recording during record play...	Press the START/STOP button.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.
When record play ends...	The tonearm returns automatically to the arm rest.	When the tonearm is lifted up, auto record muting activates for four seconds, then the pause mode is assumed.

REMOTE CONTROL OPERATION WITH AN OPTIONAL REMOTE CONTROLLER (US, FL3C MODEL)

The optional RM-44 system remote controller controls the following functions of the turntable; power on/off, start/stop of record play, tonearm up/down, and synchronized operation with Sony cassette decks using the optional RM-65 synchro remote control unit. This remote controller, with its infrared ray sensor, can control connected components by a infrared ray transmitted from the RM-44C remote commander supplied with the system remote controller. For connections and operations, refer to the system remote controller's instruction manual.



TIPS ON RECORD HANDLING

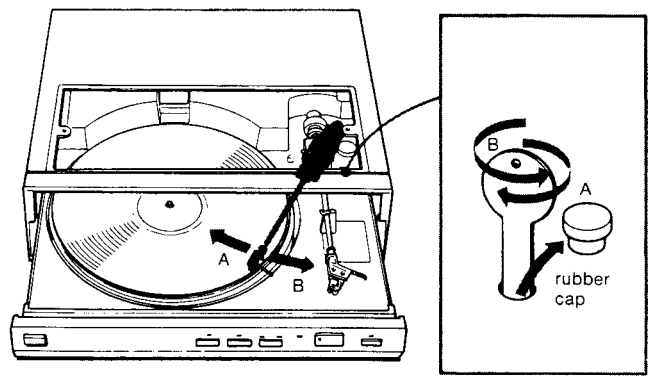
- Before playing, clean the record with a record cleaner or soft cloth. If a spray cleaner is used, make sure that it has dried completely before playing the record. Playing the record before the cleaner has dried may damage the record.
  It is a good idea to clean the record again before putting it away.
- Handle a record by its edges and do not touch the grooves. Fingerprints on the record surface may encourage an accumulation of dust, resulting in impaired tone.
- Use a commercially available anti-static spray to neutralize the static electricity on a record.
- Avoid exposing a record to direct sunlight or sources of heat, such as a hot-air duct.
- Store your records vertically. They should not be compressed.

TONEARM DROP-POINT ADJUSTMENT

The tonearm's drop-point during auto play has been adjusted at the factory. If this needs to be readjusted, proceed as follows.

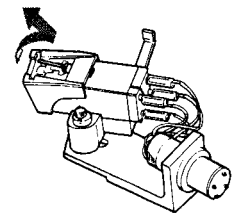
❶ Press the OPEN/CLOSE button to open the module. Then unscrew the two screws and remove the glass plate.
❷ Remove the rubber cap over the tonearm drop-point adjustment opening located at the right side of the arm base.
❸ Insert the supplied drop-point adjustment key into the opening
To move the drop-point inward . . . turn the screw in direction A.
To move the drop-point outward . . . turn the screw in direction B.
- Be sure not to turn the screw in direction B so far that the stylus tip cannot make contact with the record.

❹ Start auto play and check that the stylus lowers at the correct drop-point.
- If the drop-point is correct for 30 cm (12 inch) records, it will also be correct for 17 cm (7 inch) records.
- You can keep the adjustment key in your key holder if you like. It may come in handy for a variety of jobs.



REPLACING THE STYLUS

The stylus will lose its effectiveness and begin to damage records after about 400 hours of use.
For the VL-5 cartridge (supplied with the PS-FL3C), an ND-5G replacement stylus is available at your Sony dealer.
Handle the stylus carefully as it is very delicate.
Install the replacement stylus as follows.
❶ Secure the tonearm to the arm rest and separate the shell from the tonearm by turning the locking collar.
❷ Detach the stylus assembly by grasping it between the thumb and forefinger and pulling gently in the direction of the arrow.



❸ Insert the new stylus into the cartridge.
❹ Plug the cartridge shell into the tonearm and turn the locking collar counterclockwise until the shell is locked.

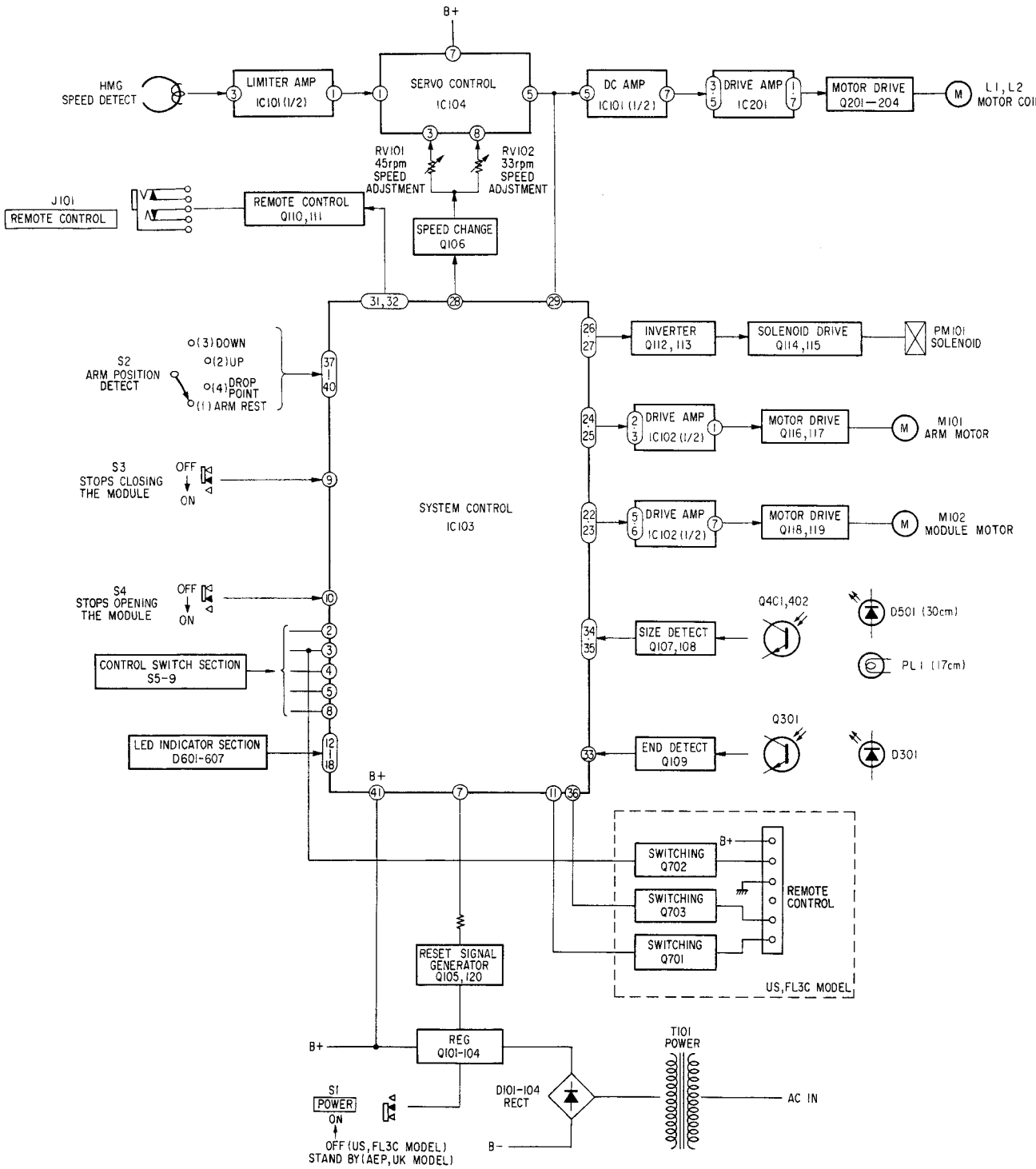
TROUBLE CHECKS

The following trouble checks will help you correct most common problems encountered with a turntable system. Should any problem persist after you have made these checks, consult your nearest Sony service facility.
Before proceeding with these trouble checks, first refer to the connections and the operating procedures on page 9.

TROUBLES	CAUSES	WHAT TO DO
The tonearm does not lower on the record but returns to the arm rest.	Transparent record	For 30 cm (12 in) records, reposition the rubber mat by turning half a circle. For 17 cm (7 in) records, place the supplied sheet underneath a record.
The play does not start when the START/STOP button is depressed.	Arm rest is locked.	Unlock the arm rest latch.
The tonearm always lowers on the point for 30 cm records.	A rubber mat other than the one supplied being used.	Use the supplied rubber mat.
	Incorrect placement of the supplied rubber mat	Align the holes in the rubber mat with the holes of the platter.
Impaired tone quality	Improper tonearm balance or tracking-force	Adjust the tonearm, referring to page 6.
	Dusty stylus	Clean the stylus with a soft brush from back to front.
	Worn stylus	The stylus life is approx. 400 hours. Replace with a new stylus.
Auto return does not operate at the end of play.	A record with shallow return grooves being played by a cartridge with low tracking force	Apply more tracking-force.
No audio from one channel	Loose connection of phono cord	Connect the cord firmly.
Steady low-pitched humming sound	Loose attachment of the cartridge shell to the tonearm	Fix the shell to the tonearm firmly.
	Ground wire is not connected to the amplifier.	Connect the ground wire to the amplifier.
Groove skipping ; tonearm skating; tonearm not advancing.	Improper tracking force	Apply proper tracking-force. (See page 8.)
	Turntable not level	Place the turntable on a level surface.
	Defective record	
Loud rumble or low-frequency howl*	The turntable is subjected to external vibration.	Place the turntable on a solid surface free from external vibration.
	The turntable is placed too near the speaker.	Locate the turntable as far away from the speaker as possible.

* This is called "acoustic feedback" and is caused when vibrations from the speakers are transmitted through the air or via solid objects (such as the shelves, the cabinet, the floor, etc.) to the turntable, where they are picked up by the stylus, amplified and reproduced through the speakers once again.

SECTION 1
BLOCK DIAGRAM

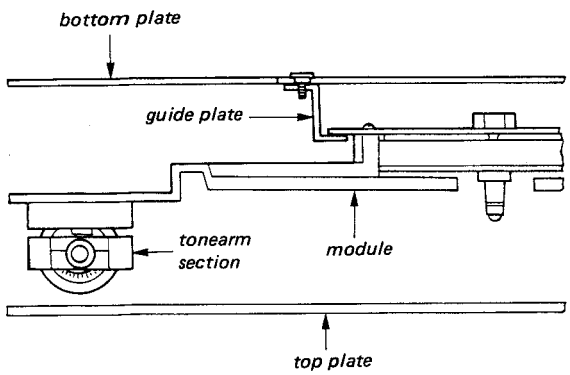


SECTION 2
DISASSEMBLY

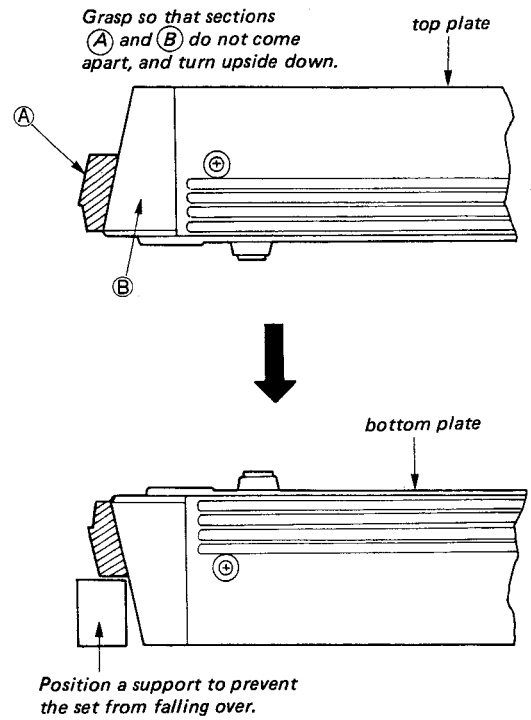
Note: Follow the disassembly procedure in the numerical order given.

2-1. NOTE ON TURNING SET UPSIDE DOWN

1. Remove the turntable.
2. Lock the arm in the arm rest.
3. If the set is turned over carelessly, the tonarm may bend. Proceed as follows:
   1) With the bottom plate attached, the module is supported by the guide plate, as shown in the figure below.

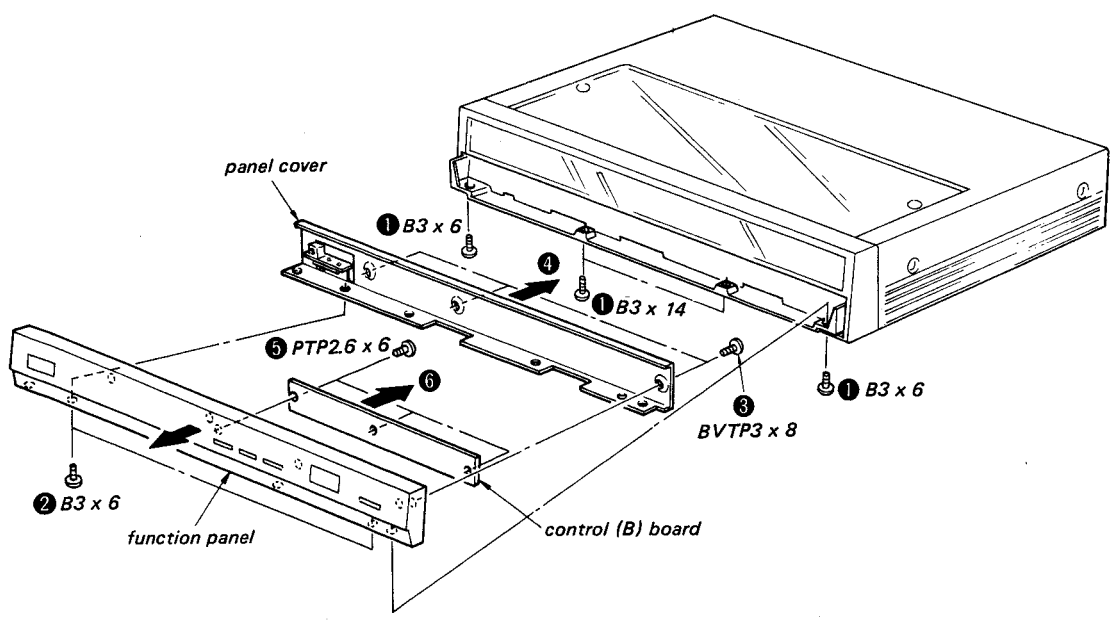


   2) If the bottom plate is removed at this point, the module will drop. So, the weight of the front of the module will fall on the tonearm cartridge section and bend the tonearm.
   3) In order to prevent this, proceed as shown below.

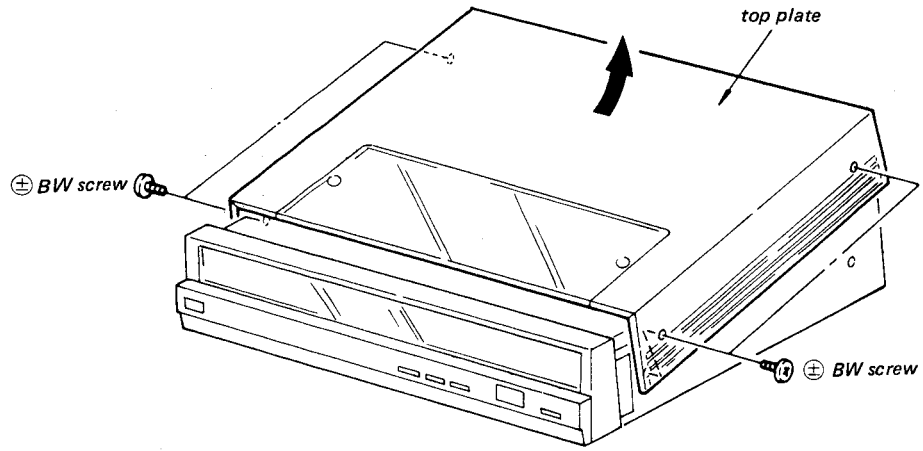

Grasp so that sections Ⓐ and Ⓑ do not come apart, and turn upside down.
top plate
Ⓐ
Ⓑ
bottom plate
Position a support to prevent the set from falling over.

2-2. REMOVAL

FUNCTION PANEL, CONTROL (B) BOARD



TOP PLATE

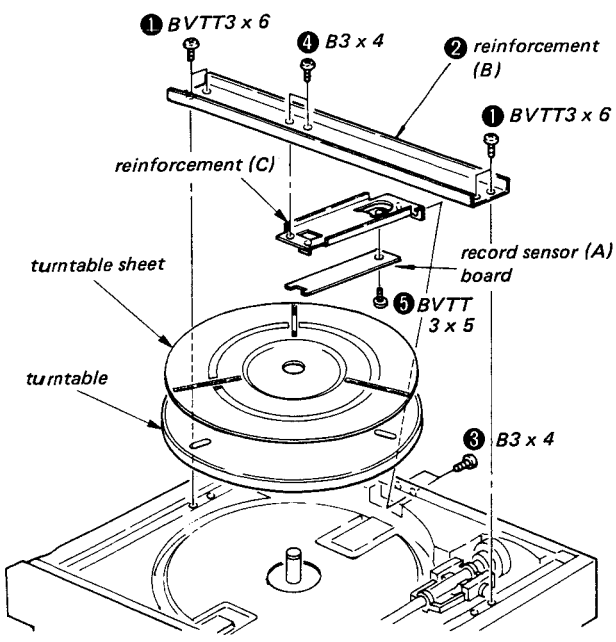


TURNTABLE, TURNTABLE SHEET, RECORD SENSOR (A) BOARD

– When the module does not slide –

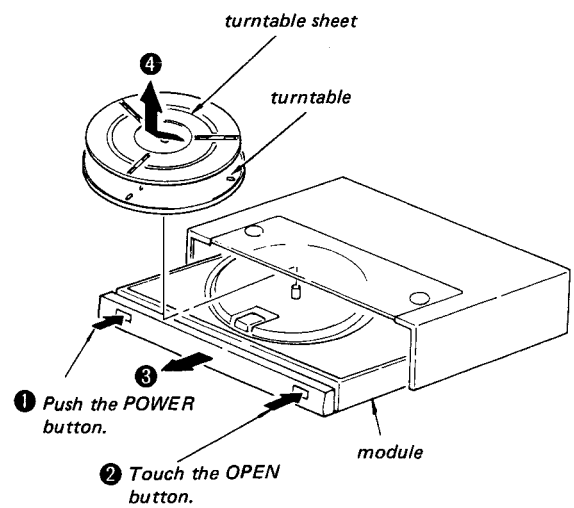
❶, ❷ : turntable, turntable sheet

❸ – ❺ : record sensor (A) board



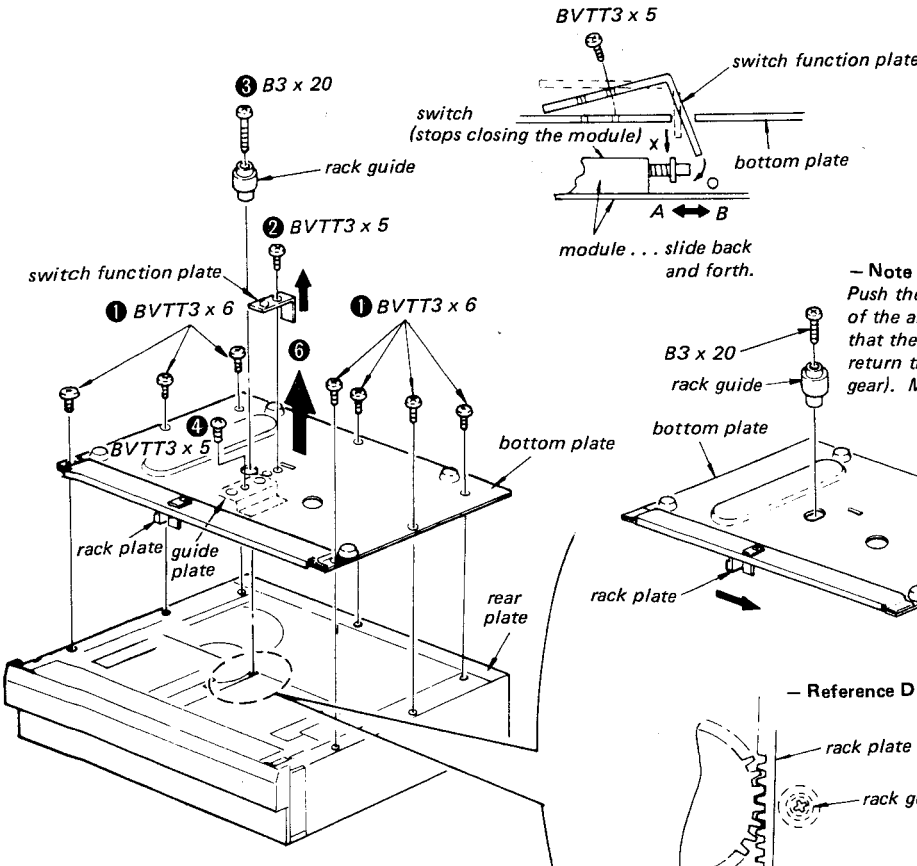
TURNTABLE, TURNTABLE SHEET

– When the module slides –

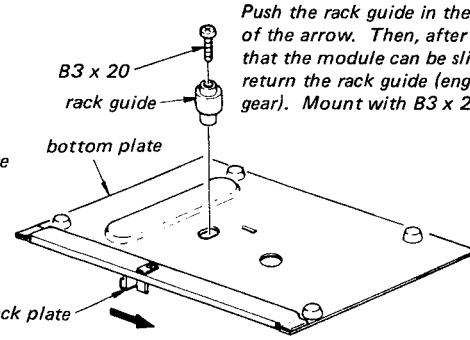


BOTTOM PLATE

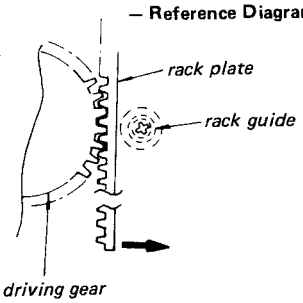
– Note on installing switch function plate –
Install so that the switch on the module moves in the direction of arrow B and touches the switch function plate.



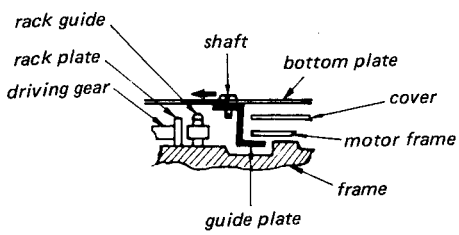
– Note on installing rack guide –
Push the rack guide in the direction of the arrow. Then, after confirming that the module can be slide by hand, return the rack guide (engage with gear). Mount with B3 x 20 screw.



– Reference Diagram –



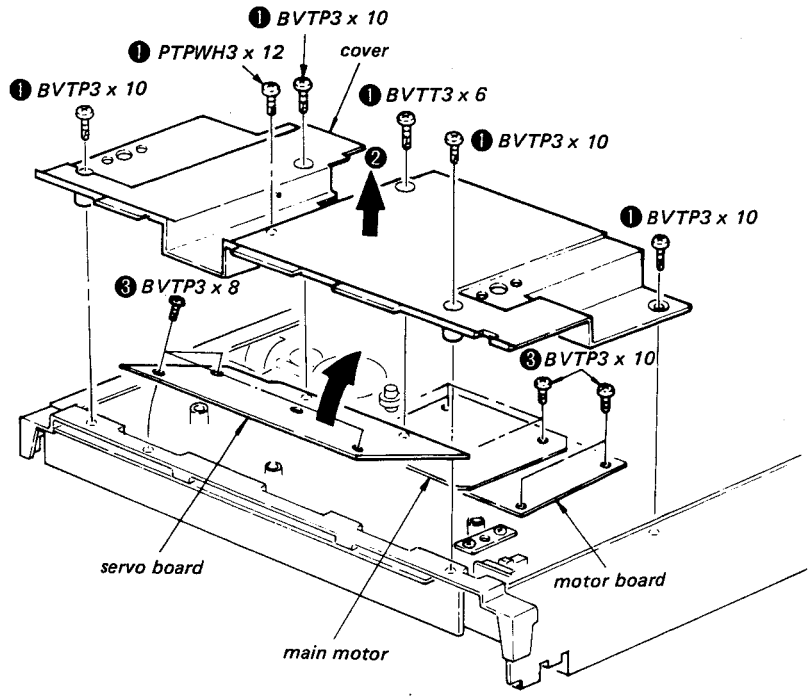
❺ *Loosen the two shafts and move the guide plate in the direction of the arrow.*
(When mounting, return the guide plate to the position shown and tighten the shafts.)



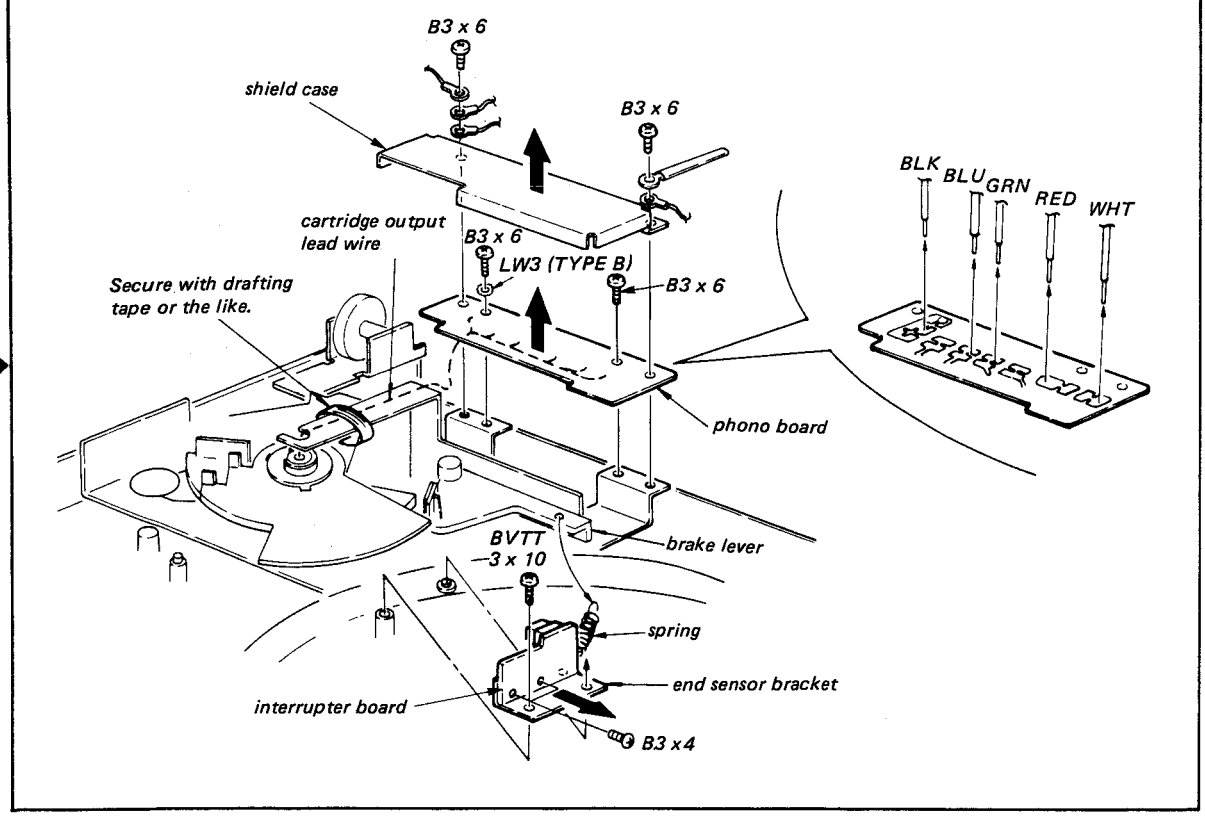
Notes on Installing Bottom Plate

When the module is pushed in and out by hand, confirm that the leads near the power transformer on the rear plate do not touch the module, then mount the bottom plate. If the bottom plate is mounted when the leads are touching the module, they may be damaged, causing AC power voltage to flow in the chassis. This may result in electrical shock, so be very careful.

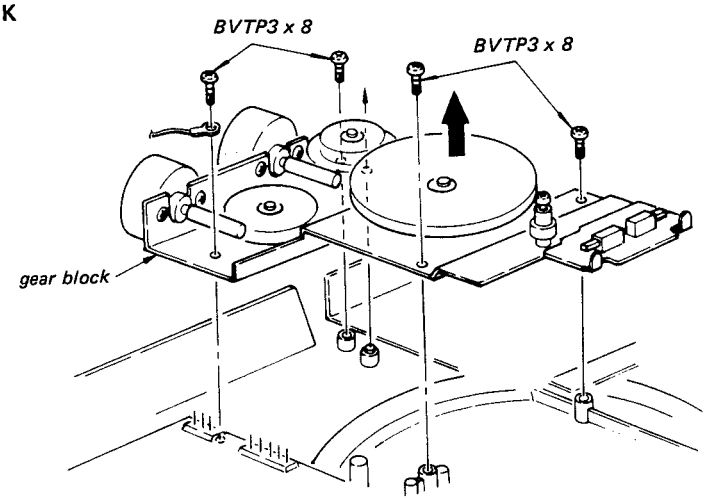
MAIN MOTOR, MOTOR BOARD, SERVO BOARD



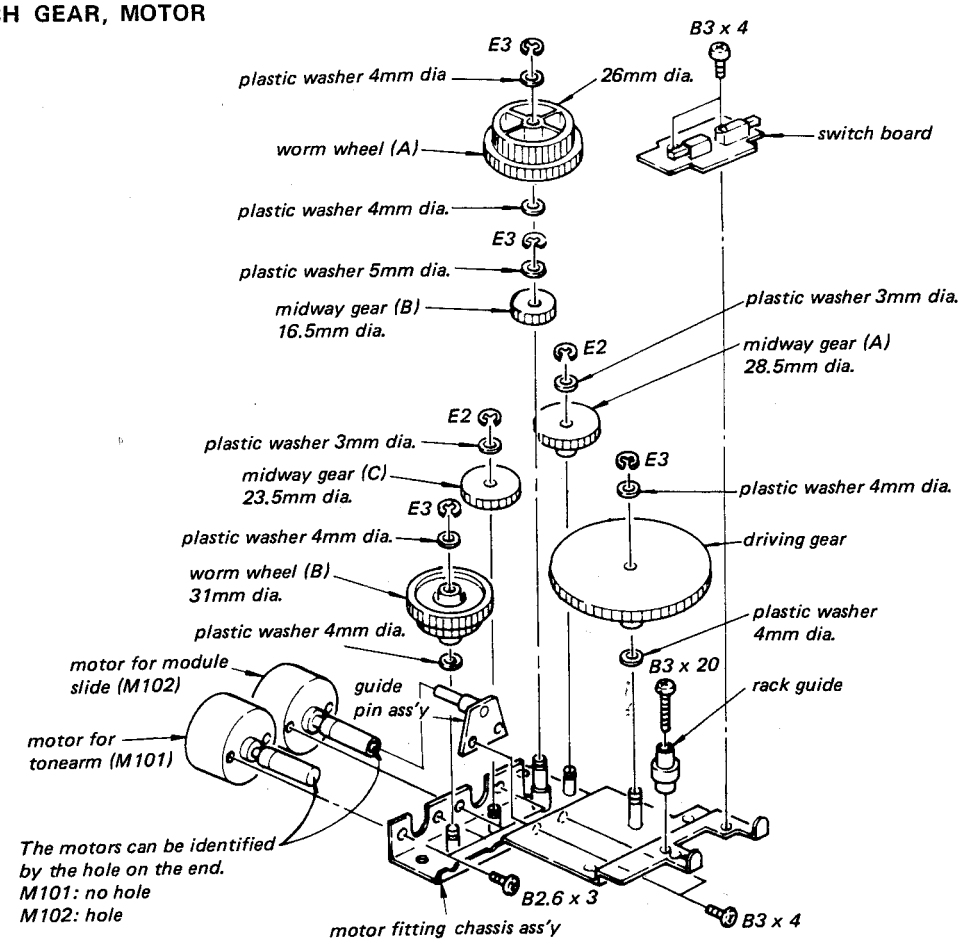
PHONO BOARD, INTERRUPTER BOARD



GEAR BLOCK



EACH GEAR, MOTOR



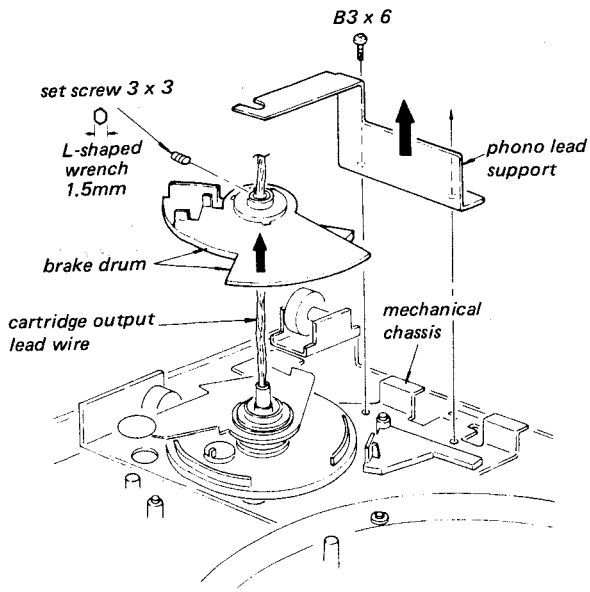
Note: Refer to the maximum diameter for each gear when mounting.

Module slide system: M102→worm wheel (A)→driving gear

Tonearm system: M101→worm wheel (B)→midway gear (C) → midway gear (B)→midway gear (A)→tonearm

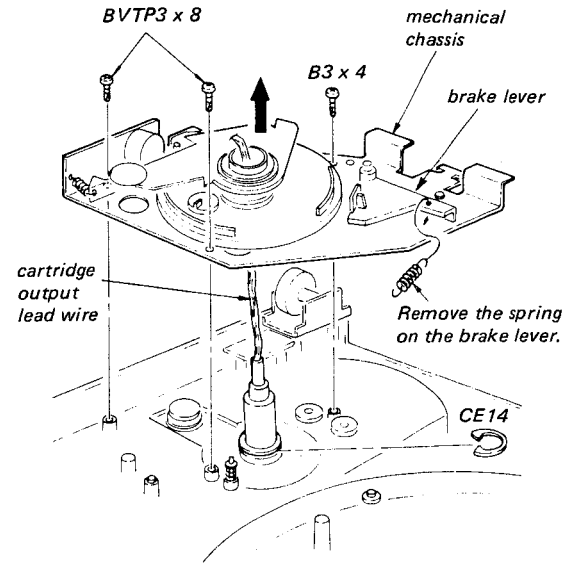
The gear angles do not need to be aligned, but the gears must engage.

BRAKE DRUM

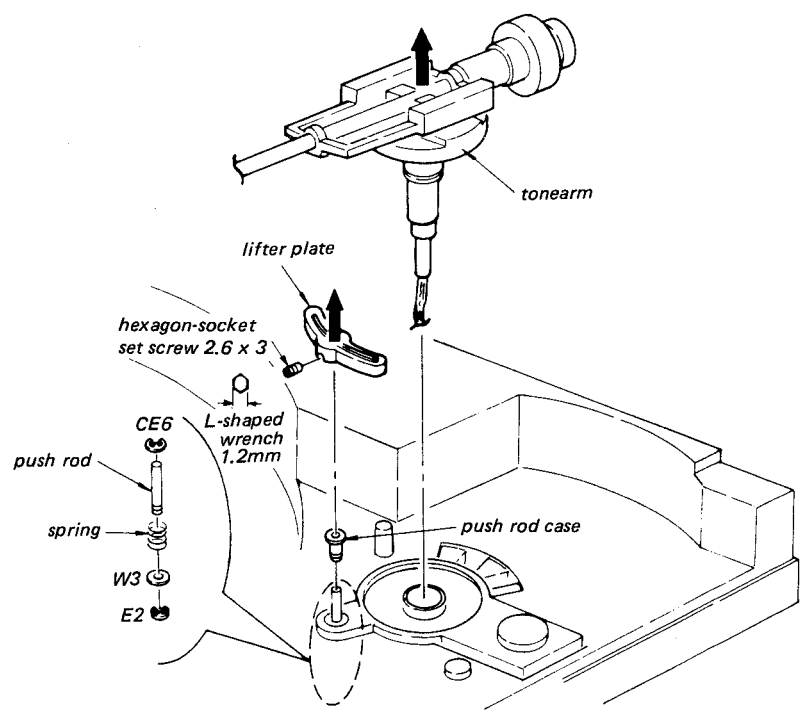


Note: After mounting, perform the brake drum position adjustment on page 25.

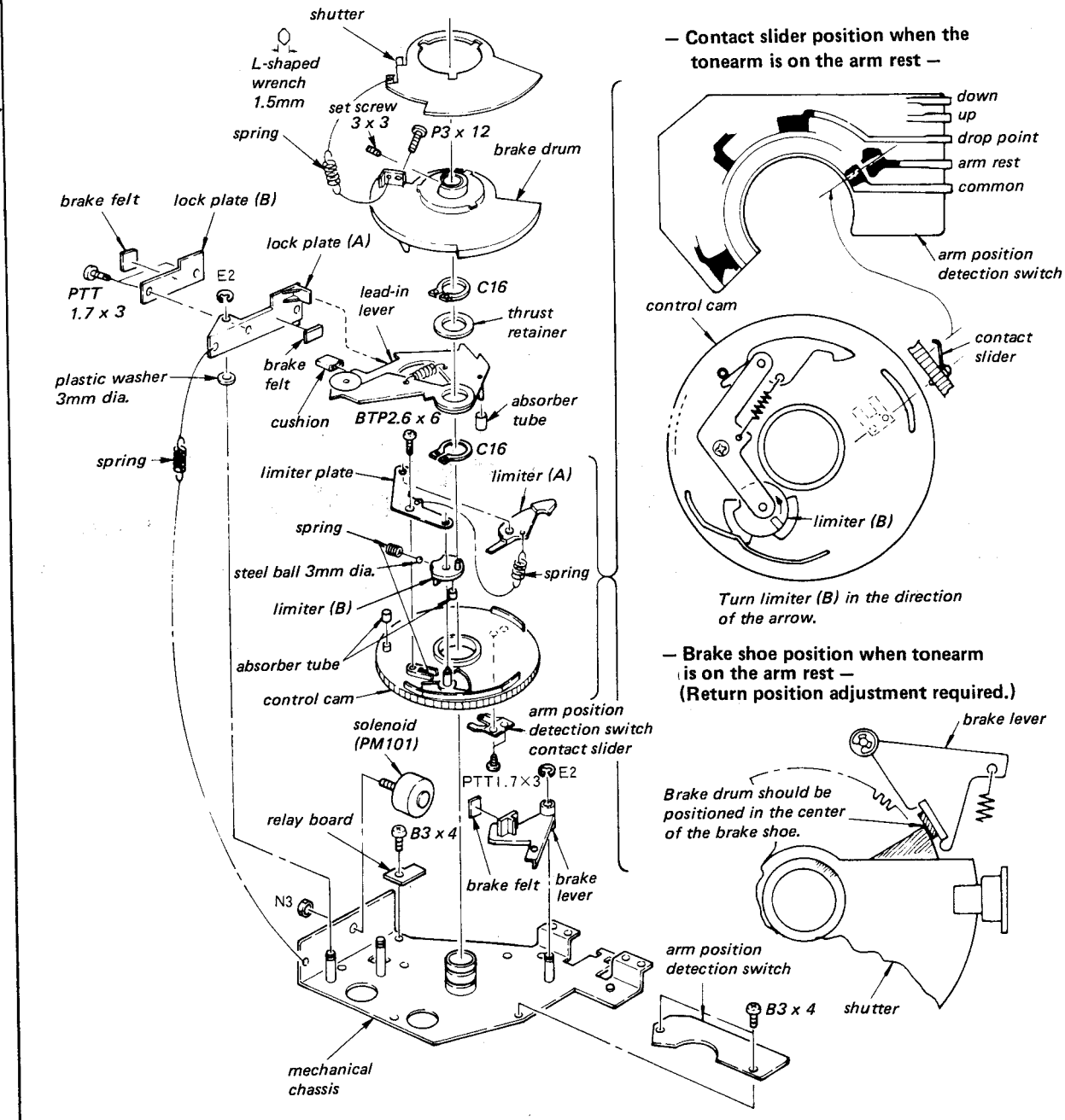
MECHANICAL CHASSIS



TONEARM, LIFTER PLATE



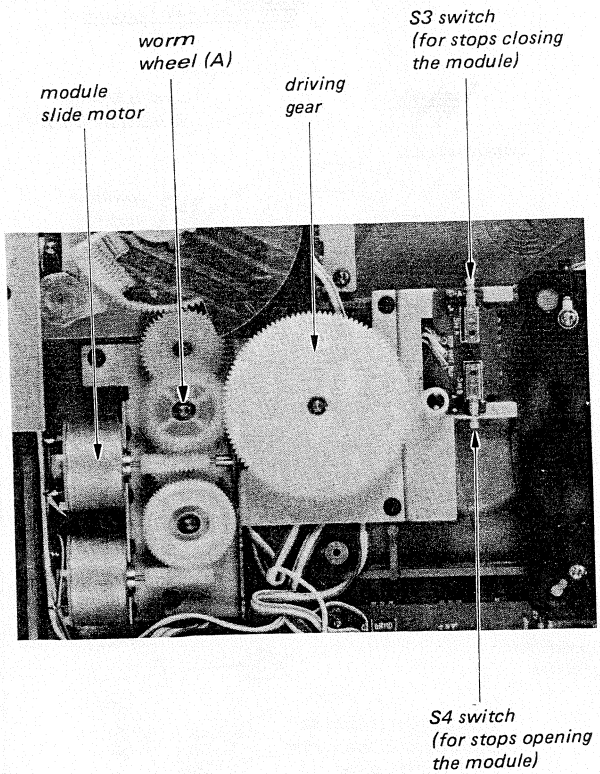
CONTROL CAM


shutter
L-shaped wrench 1.5mm
set screw 3 x 3
P3 x 12
spring
brake drum
brake felt
lock plate (B)
lock plate (A)
PTT 1.7 x 3
E2
lead-in lever
C16
thrust retainer
plastic washer 3mm dia.
brake felt
cushion
BTP2.6 x 6
absorber tube
C16
spring
limiter plate
limiter (A)
spring
steel ball 3mm dia.
spring
limiter (B)
absorber tube
control cam
solenoid (PM101)
arm position detection switch contact slider
PTT1.7x3
E2
relay board
B3 x 4
brake felt
brake lever
N3
mechanical chassis
– Contact slider position when the tonearm is on the arm rest –
down
up
drop point
arm rest
common
arm position detection switch
control cam
contact slider
limiter (B)
Turn limiter (B) in the direction of the arrow.
– Brake shoe position when tonearm is on the arm rest –
(Return position adjustment required.)
brake lever
Brake drum should be positioned in the center of the brake shoe.
arm position detection switch
B3 x 4
shutter

SECTION 3
ADJUSTMENTS

3-1. NOTES ON ADJUSTMENT

- When performing adjustments which require turntable rotation, place a record on the turntable. If this is not done, the turntable will not rotate when the START/STOP switch is pressed.
- When the POWER switch is turned ON with the bottom plate removed, the module slide motor and gears do not stop rotating, but this is normal. They can be stopped by pushing S3 or S4, shown below.

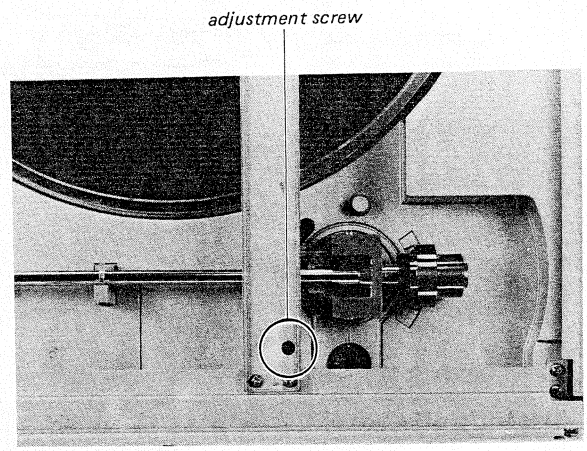

worm wheel (A)
S3 switch (for stops closing the module)
module slide motor
driving gear
S4 switch (for stops opening the module)

3-2. MECHANICAL ADJUSTMENT

Stylus Drop-point Adjustment

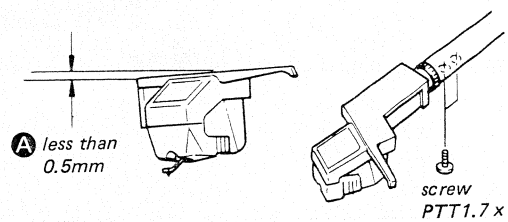
1. Remove the adjustment hole cap.
2. Set stylus force, IFC scale.
   (for VC-41G cartridge, stylus force 1.5g; IFC scale 1.5)
3. SPEED switch: 33 rpm
4. Use test record YFSC-16. Press START/STOP switch.
5. Turn the adjustment screw so that the stylus tip drops on the record at the 7–15 count position.
   clockwise: drop-point moves inward (larger count)
   counterclockwise: drop-point moves outward (lower count)

Note: The proper adjustment for a 30cm record is also correct for a 17cm record.



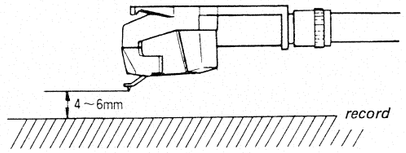
Shell's Horizontal Balance Adjustment

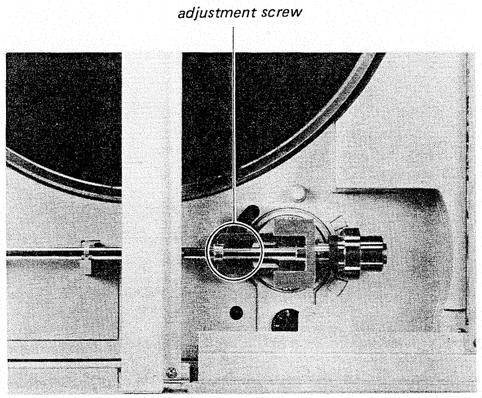
Loosen the neck cylinder screw and adjust so that section Ⓐ (shell slant) is less than 0.5mm.



Stylus Height Adjustment

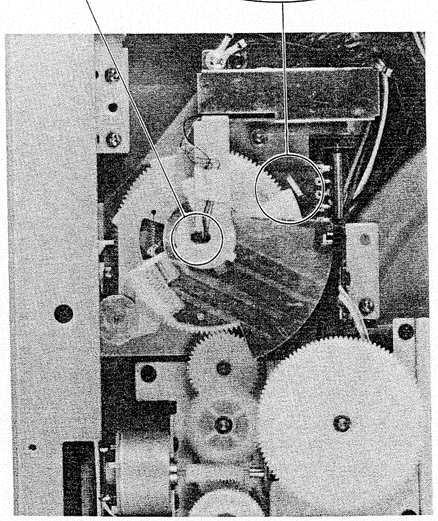
1. Obtain zero balance and apply appropriate stylus force with counterweight. (1.5g for VC-41G cartridge)
2. POWER switch: ON
3. Put a record on and press START/STOP switch.
4. Turn the POWER switch OFF when the tonearm reaches the end of the record, and the arm lifter rises to perform auto return.
5. At this time, the distance between the record and the stylus tip is 4 – 6mm.
6. Confirm that the cartridge does not touch the top plate when the module is pulled out.





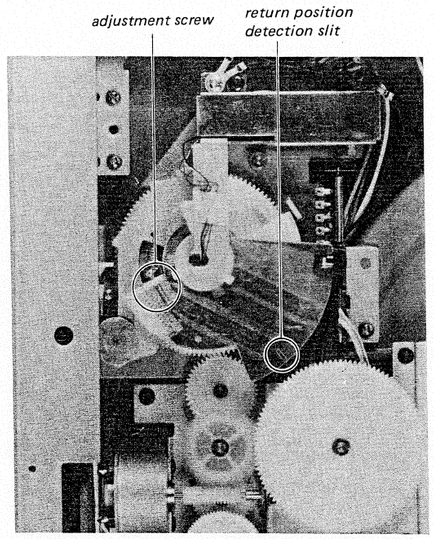
Brake Drum Position Adjustment

1. Lock the tonearm on the arm rest.
2. Adjust the brake drum position so that the brake drum edge comes to the center of the brake felt.



Return Position Adjustment

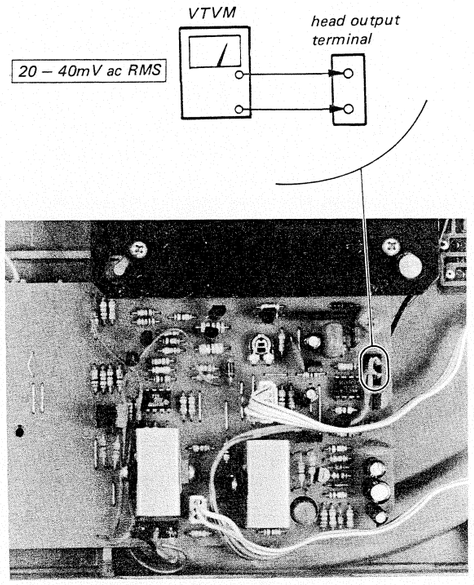
1. SPEED switch: 33 rpm
2. Put on a test record. (YFSC-16)
   Move the tonearm by hand and place in the return check groove.
3. Press the START/STOP switch and turn the adjustment screw so that it returns at count of 10 – 12.
   Clockwise: to the groove
   Counterclockwise: to the end of the record



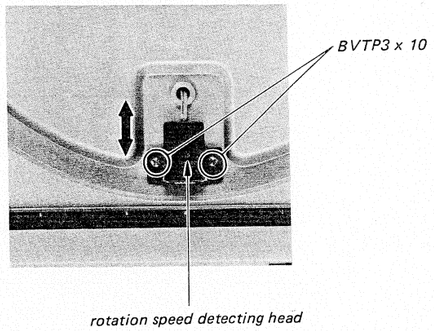
3-3. ELECTRICAL ADJUSTMENTS

Rotation Speed Detecting Head Output Adjustment

1. POWER switch: ON
   START switch: ON
   SPEED switch: 33 rpm
2. Loosen the adjustment screw (BVTP3 x 10) and move the head back and forth so that the head output terminal is 20 – 40mV ac RMS.



– With turntable removed –

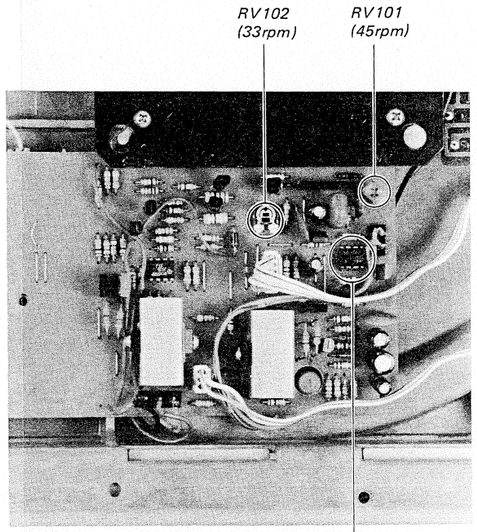


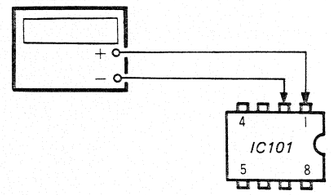
3. After adjusting, rotate the turntable slowly by hand, and confirm that the head and magnetic surface of the turntable do not touch.

Note: The turntable magnetic surface and head surface should note be less than 0.3mm apart (thickness of a business card). Improper adjustment causes wow and flutter.

Rotation Speed Adjustment

1. Connect frequency counter to IC101 pin ①.
2. POWER siwtch: ON
   START switch: ON
   SPEED switch: 45 rpm
3. Adjust RV101 so that the frequency counter reading is 384Hz.
4. SPEED switch. 33 rpm
5. Adjust RV102 so that the frequency counter reading is 284Hz.

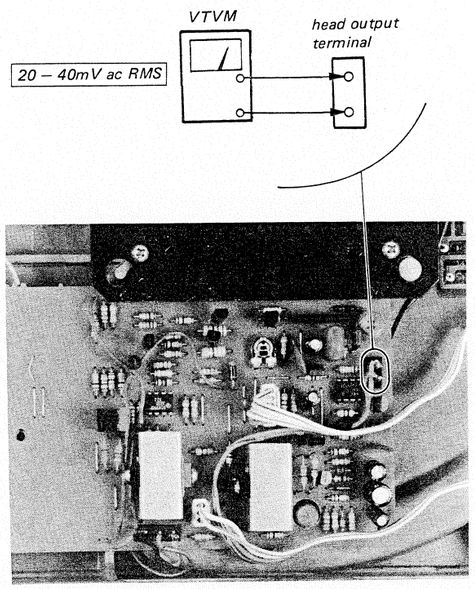




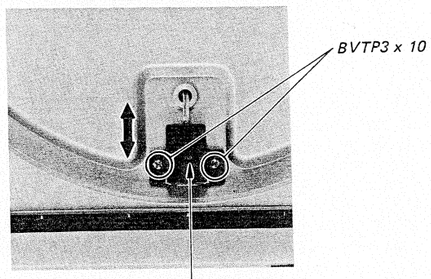
3-3. ELECTRICAL ADJUSTMENTS

Rotation Speed Detecting Head Output Adjustment

1. POWER switch: ON
   START switch: ON
   SPEED switch: 33 rpm
2. Loosen the adjustment screw (BVTP3 x 10) and move the head back and forth so that the head output terminal is 20 – 40mV ac RMS.



– With turntable removed –

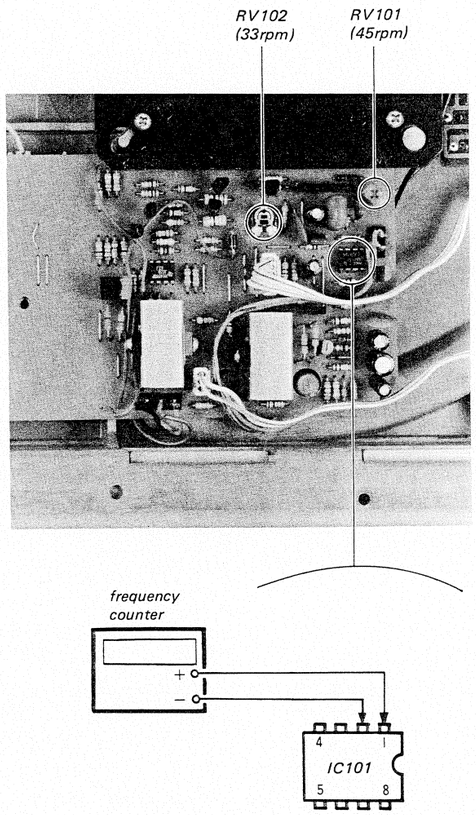


3. After adjusting, rotate the turntable slowly by hand, and confirm that the head and magnetic surface of the turntable do not touch.

Note: The turntable magnetic surface and head surface should note be less than 0.3mm apart (thickness of a business card). Improper adjustment causes wow and flutter.

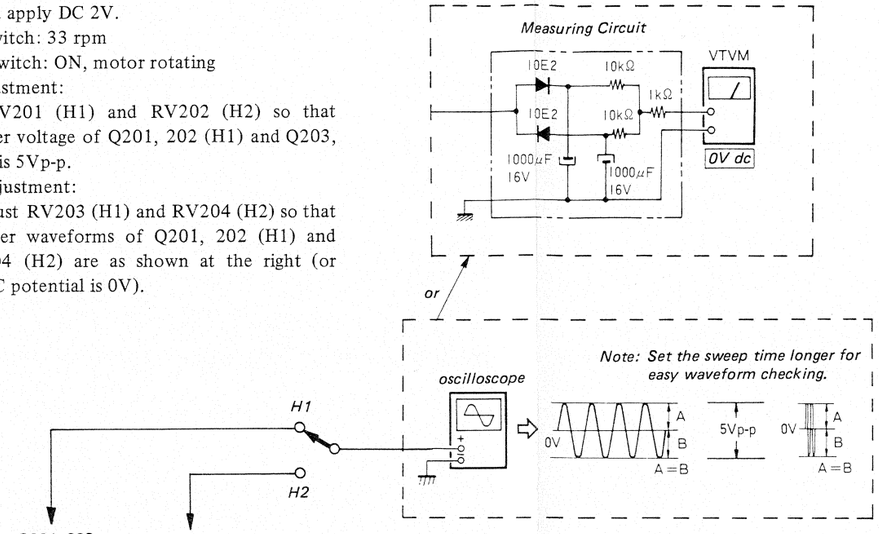
Rotation Speed Adjustment

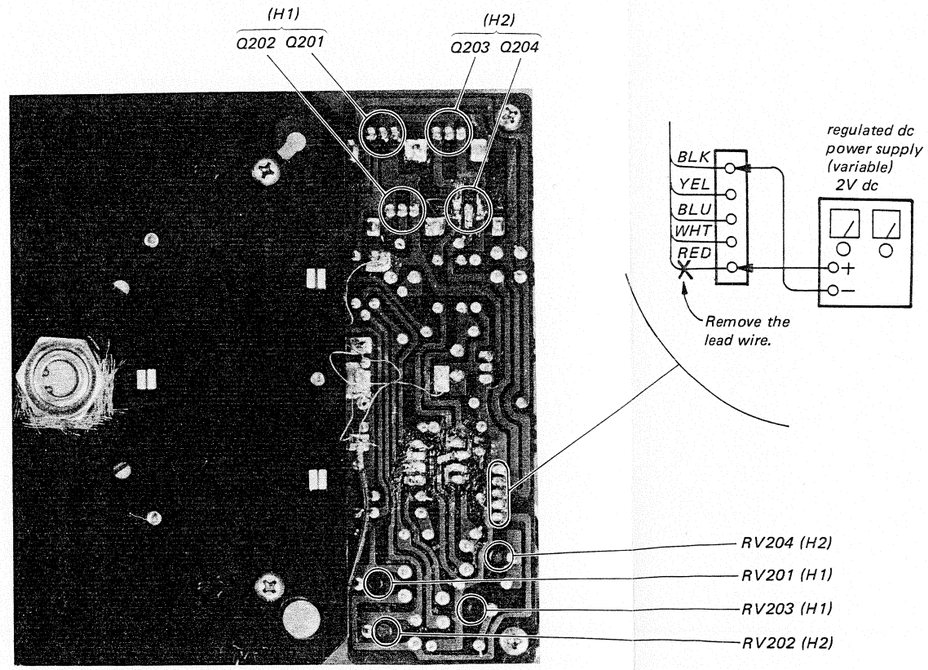
1. Connect frequency counter to IC101 pin ①.
2. POWER siwtch: ON
   START switch: ON
   SPEED switch: 45 rpm
3. Adjust RV101 so that the frequency counter reading is 384Hz.
4. SPEED switch. 33 rpm
5. Adjust RV102 so that the frequency counter reading is 284Hz.



Gain/Offset Adjustment

1. Disconnect the lead wire (red) in the figure shown below and apply DC 2V.
2. SPEED switch: 33 rpm
   POWER switch: ON, motor rotating
3. Gain Adjustment:
   Adjust RV201 (H1) and RV202 (H2) so that the emitter voltage of Q201, 202 (H1) and Q203, 204 (H2) is 5Vp-p.
4. Offset Adjustment:
   Next, adjust RV203 (H1) and RV204 (H2) so that the emitter waveforms of Q201, 202 (H1) and Q203, 204 (H2) are as shown at the right (or so that DC potential is 0V).





• Refer to page 34 for notes and semiconductor lead layouts.

	A	B	C	D	E	F	G	H
D		604	601	607	605 301	606	603	108 602	501	105 107 106	101, 102, 103, 104
IC, Q		IC103 108 107	109	110	111	116, 117	118 112, 113	402 IC102	119	101 114, 115	104	106	401	103 102	105 IC104	IC101	120

1

2

3

4

5

【RELAY BOARD】

【INTERRUPTER BOARD】

【RECORD SENSOR (A) BOARD】

【RECORD SENSOR (B) BOARD】

【JACK BOARD】

【PHONO BOARD】

【SWITCH BOARD】

【SERVO BOARD】

IC 101,102

IC 104

【CONTROL (B) BOARD】

【CONTROL (A) BOARD】

【POWER SUPPLY BOARD】

notes and semiconductor lead layouts.

E F G H I J K L

603 108 602 501 105 107 106 101, 102, 103, 104 D

117 118 402 119 IC102 112,113 101 104 114,115 106 401 103 102 105 IC101 120 IC104 201 202 203 204 IC201 701 702 703 IC,Q

1 2 3 4 5

【RECORD SENSOR (A) BOARD】

R501 11V R502 D501 SIZE DETECT (17cm) SIZE DETECT (30cm) VIO ORG

【RECORD SENSOR (B) BOARD】

SONY 1-607-026- Q402 SIZE DETECT (17cm) Q401 SIZE DETECT (30cm)

【JACK BOARD】

WHT BLK RED J101 REMOTE CONTROL CHASSIS GROUND

【PHONO BOARD】

GROUND LEAD WIRE R-CH RED L-CH WHT 5Vp-p 0V CHASSIS GROUND BLK RED WHT GRN BLU R802 R801 S10 MUTING PLAY STOP TONEARM

【REMOTE CONTROL RELAY BOARD】

REMOTE CONTROL BLU YEL ORG RED BRN 4.8V

【REMOTE CONTROL BOARD】

RED BRN YEL Q701 Q702 Q703 R705 R706 R704 R703 R709 R708

US,FL3C MODEL

【MOTOR BOARD】

Q201 Q203 Q202 Q204 C203 C204 C201 C202 R209 R210 R211 R212 R202 R208 MARKING SIDE H2 H1 IC201 R201 R203 R206 R205 R213 BLK YEL BLU WHT RED RV204 RV201 RV202 RV203 R207 R204 OFFSET GAIN

IC 101,102

MOTOR COIL L2 L1

33rpm 3.5msec 45rpm 2.6msec 33rpm 0.25Vp-p 45rpm 0.3Vp-p

34Vp-p

IC 104 COMPARATOR TRIGGER PULSE GENERATOR SCHMITT CIRCUIT REG

6Vp-p 0V CHASSIS GROUND

AEP MODEL

AC INPUT 220V AC 50/60Hz RED VIO WHT T101 POWER TRANSFORMER RED VIO BLK RED WHT

UK MODEL

AC INPUT 240V AC 50/60Hz VIO RED WHT T101 POWER TRANSFORMER RED VIO BLK RED WHT

【POWER SUPPLY BOARD】

SONY 1-607-024- BLK BRN GRY RED BLK RED D102 23.5V C2 C1 R1 R2 D101 D103 D104 -25V

US,FL3C MODEL

AC INPUT 120V AC 60Hz ORG WHT T101 POWER TRANSFORMER RED WHT BLK RED ORG

IC 201

【CONTROL (A) BOARD】

SONY 1-607-031- CHASSIS GROUND ON OFF (US,FL3C MODEL) STAND BY (AEP,UK MODEL) S1 POWER BLU WHT RED

HMG SPEED DETECT HEAD 3.6Vp-p

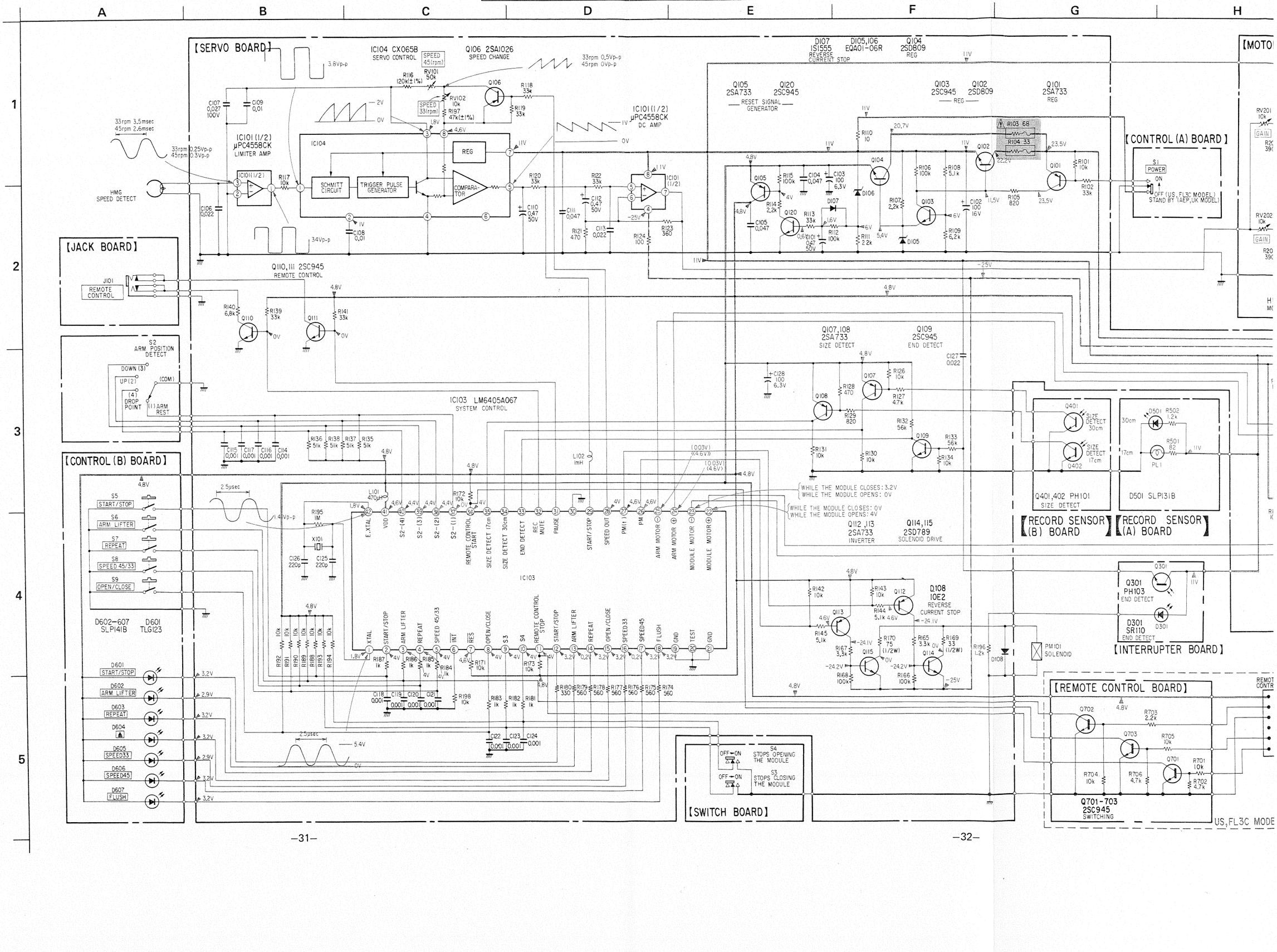
IV 0.5Vp-p 0V 2V 0V

D603 REPEAT S7 D602 ARM LIFTER S6 ORG GRY WHT RED CHASSIS GROUND

BLK BLK BRN BLK GRY BLU WHT RED R102 R101 D105 R109 R113 C101 C102 C103 C105 R111 R112 1.6V D107 D106 R108 R107 R106 Q101 Q104 Q103 Q102 Q105 Q120 Q118 Q119 Q117 Q112 Q113 Q114 Q115 Q106 D108 IC102 IC101 IC104 R154 R155 R158 R153 R159 R162 R163 R110 R105 R104 R103 R123 R122 R124 R121 R120 R119 R116 R6 R164 R151 R150 R149 R148 R165 R166 R167 R169 R168 R170 R145 R142 R118 C112 C111 C110 C108 C106 C107 C109 C113 RV102 RV101 SPEED 33(rpm) SPEED 45(rpm) 85 70 60 50 40 35 20 IC

7,8 7 8 12 11

4-2. SCHEMATIC DIAGRAM • Refer to page 34 for notes.



PS-FL3/FL3C

D E F G H I J K

1 2 3 4 5

[MOTOR BOARD] IC201 μPC4558CK DRIVE AMP Q201,203 2SD809 MOTOR DRIVE

[CONTROL (A) BOARD] S1 POWER ON OFF (US, FL3C MODEL) STAND BY (AEP, UK MODEL)

[PHONO BOARD] S10 MUTING PLAY STOP WHT BLU RED GRN BLK L-CH R-CH GND

L1 MOTOR COIL L2 MOTOR COIL TONEARM

H1, H2 HL-300C MOTOR POSITION DETECT

Q202, 204 2SB731 MOTOR DRIVE

Q116, 118 2SD809 MOTOR DRIVE

Q117, 119 2SB731 MOTOR DRIVE

IC102 μPC4558CK DRIVE AMP

M101 ARM MOTOR

M102 MODULE MOTOR

Q107, 108 2SA733 SIZE DETECT

Q109 2SC945 END DETECT

Q401, 402 PH101 SIZE DETECT

D501 SLPI31B

[RECORD SENSOR (B) BOARD] [RECORD SENSOR (A) BOARD]

Q112, 113 2SA733 INVERTER

Q114, 115 2SD789 SOLENOID DRIVE

D108 10E2 REVERSE CURRENT STOP

PM101 SOLENOID

[INTERRUPTER BOARD]

Q301 PH103 END DETECT

D301 SR110 END DETECT

[REMOTE CONTROL BOARD] REMOTE CONTROL

Q701-703 2SC945 SWITCHING

US, FL3C MODEL

[SWITCH BOARD]

S4 STOPS OPENING THE MODULE

S3 STOPS CLOSING THE MODULE

[POWER SUPPLY BOARD]

D101-104 10E2 RECT

T101 POWER

AC INPUT 120V AC 60Hz

AC INPUT 240V AC 50/60Hz

US, FL3C MODEL

UK MODEL

AEP MODEL

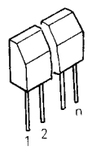
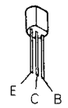
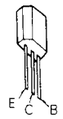
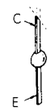
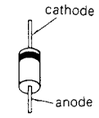
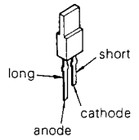
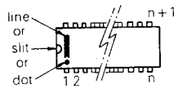
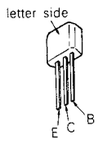
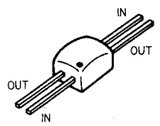
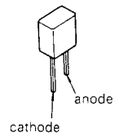
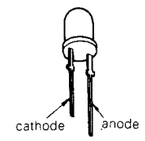
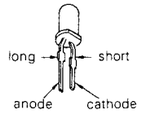
WHILE THE MODULE CLOSES: 3.2V
WHILE THE MODULE OPENS: 0V

WHILE THE MODULE CLOSES: 0V
WHILE THE MODULE OPENS: 4V

WHILE THE MODULE STOPS : -0.02V
WHILE THE MODULE OPENS : 10V
WHILE THE MODULE CLOSES : -10V

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Semiconductor Lead Layouts

CX065B 	**2SA733** **2SC945** **2SC1364** **2SD774** **2SD789** 	**2SA1026** **2SA1027R** 	**PH101** 	**1S1555** **10E2** **EQA01-06R** 	**SLP141B** 
LM6405A067 **μPC4558CK**  (Top view)		**2SB731** **2SD809** 	**PH103** 	**HL-300C** 	**SR110** 
				SLP131B 	**TLG123** 

– For schematic diagram –

Note:

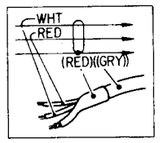
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- : fusible resistor.
- : adjustment for repair.
- : B+ bus.
- : B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions.
  - No mark : POWER switch ON with tonearm set on arm rest.
  - ( ) : When playing or tonearm set on arm rest at 33rpm.
  - 〈 〉 : Until tonearm lowers onto record after pushing START switch at 33rpm.
  - 《 》 : Until tonearm returns to arm rest after pushing STOP switch at 33rpm.
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with respect to ground at 33rpm with tonearm set on arm rest.

Note: Voltages are measured with a VOM (50kΩ/V).

– For mounting diagram –

Note:

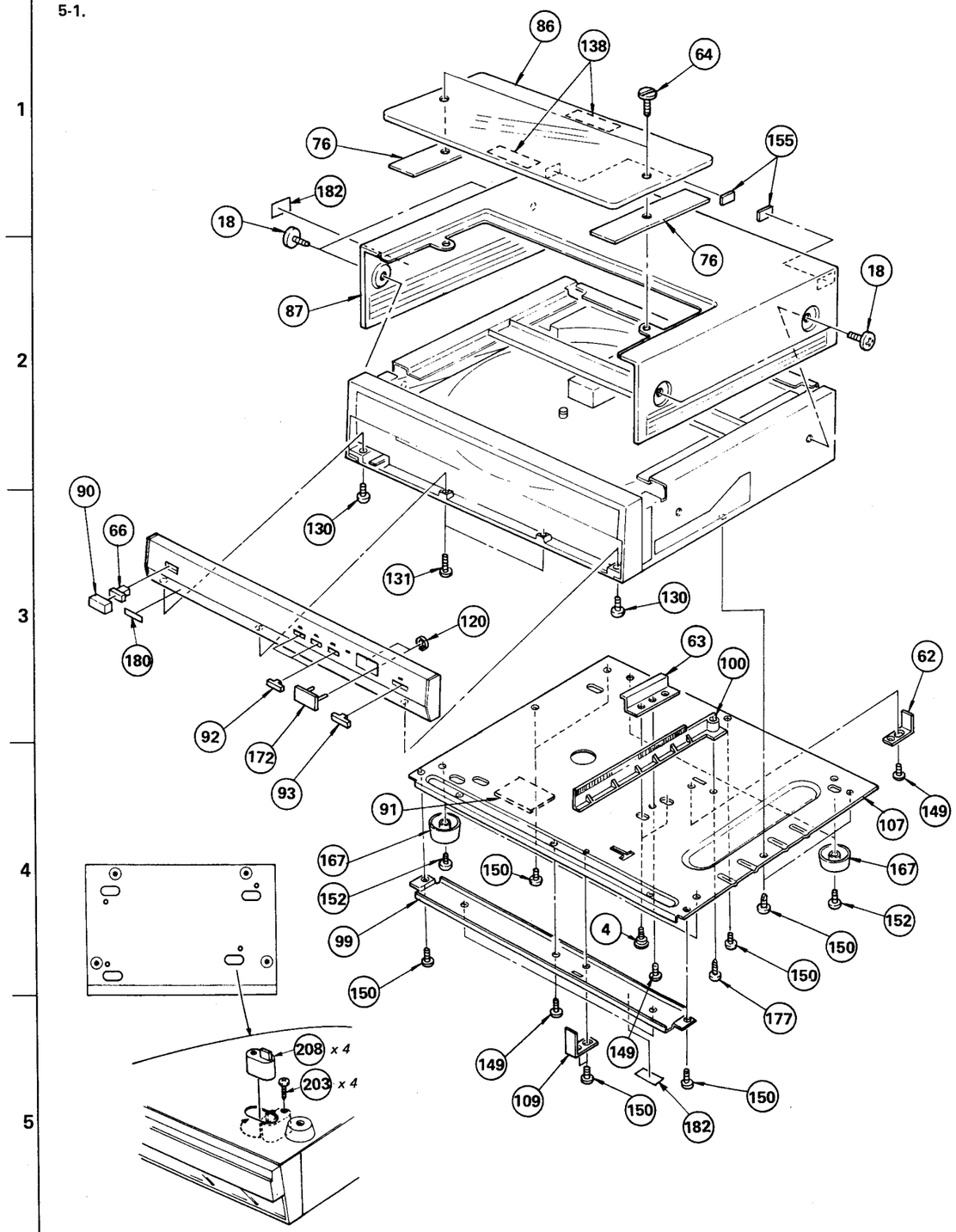
- Color code of sleeving over the end of the jacket.



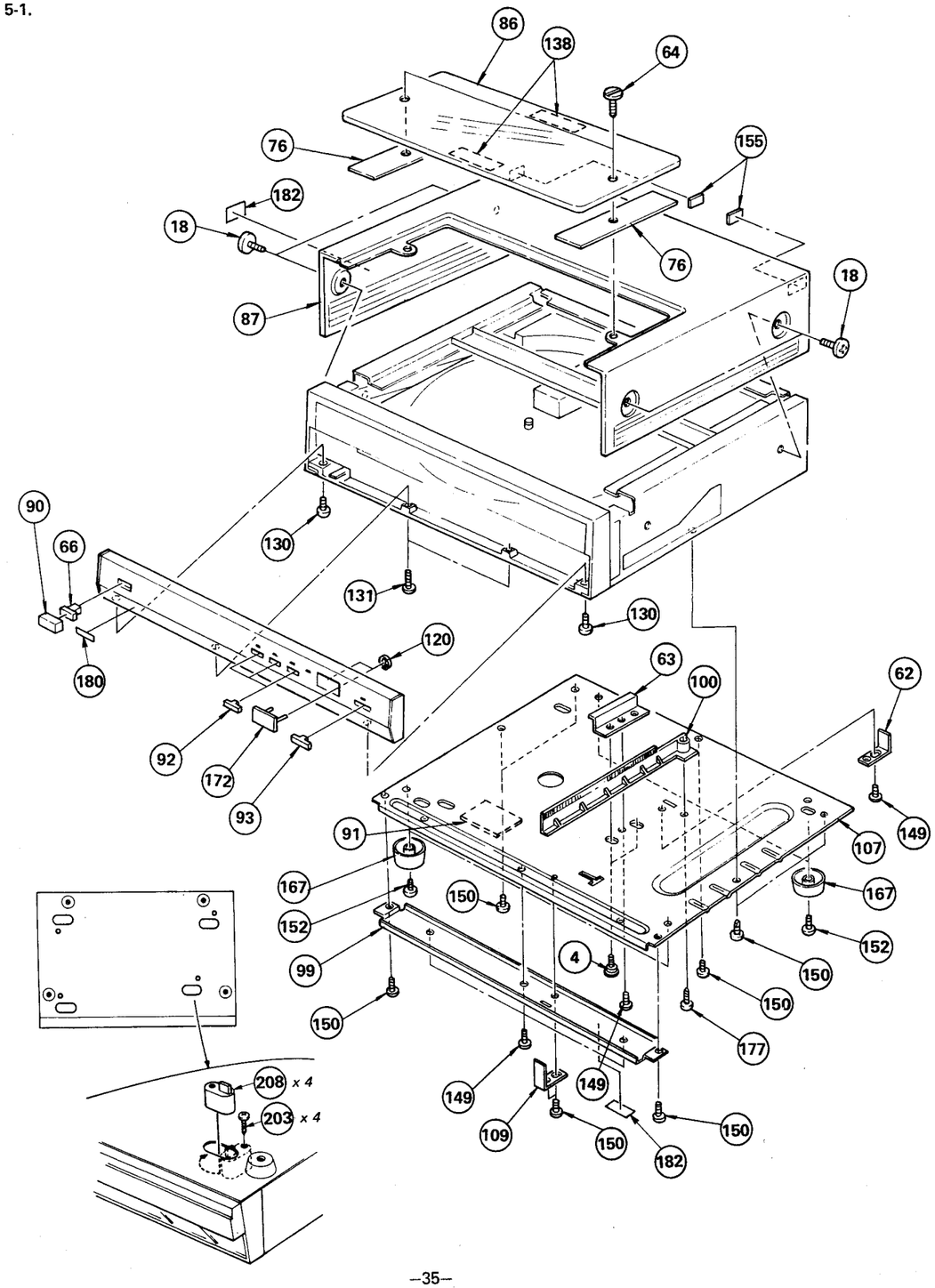
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ▒ : B+ pattern

PS-FL3/FL3C PS-FL

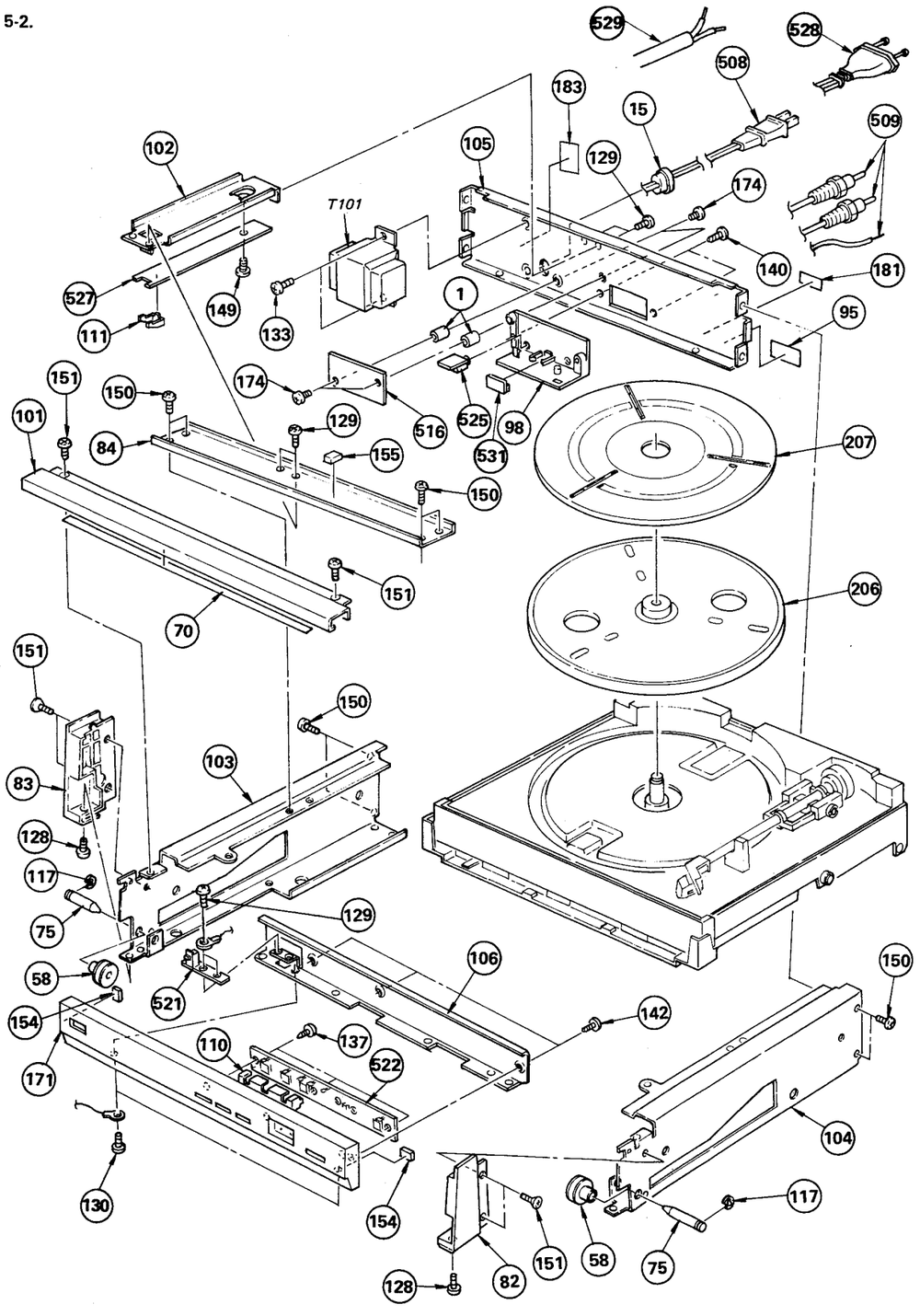
5-1.



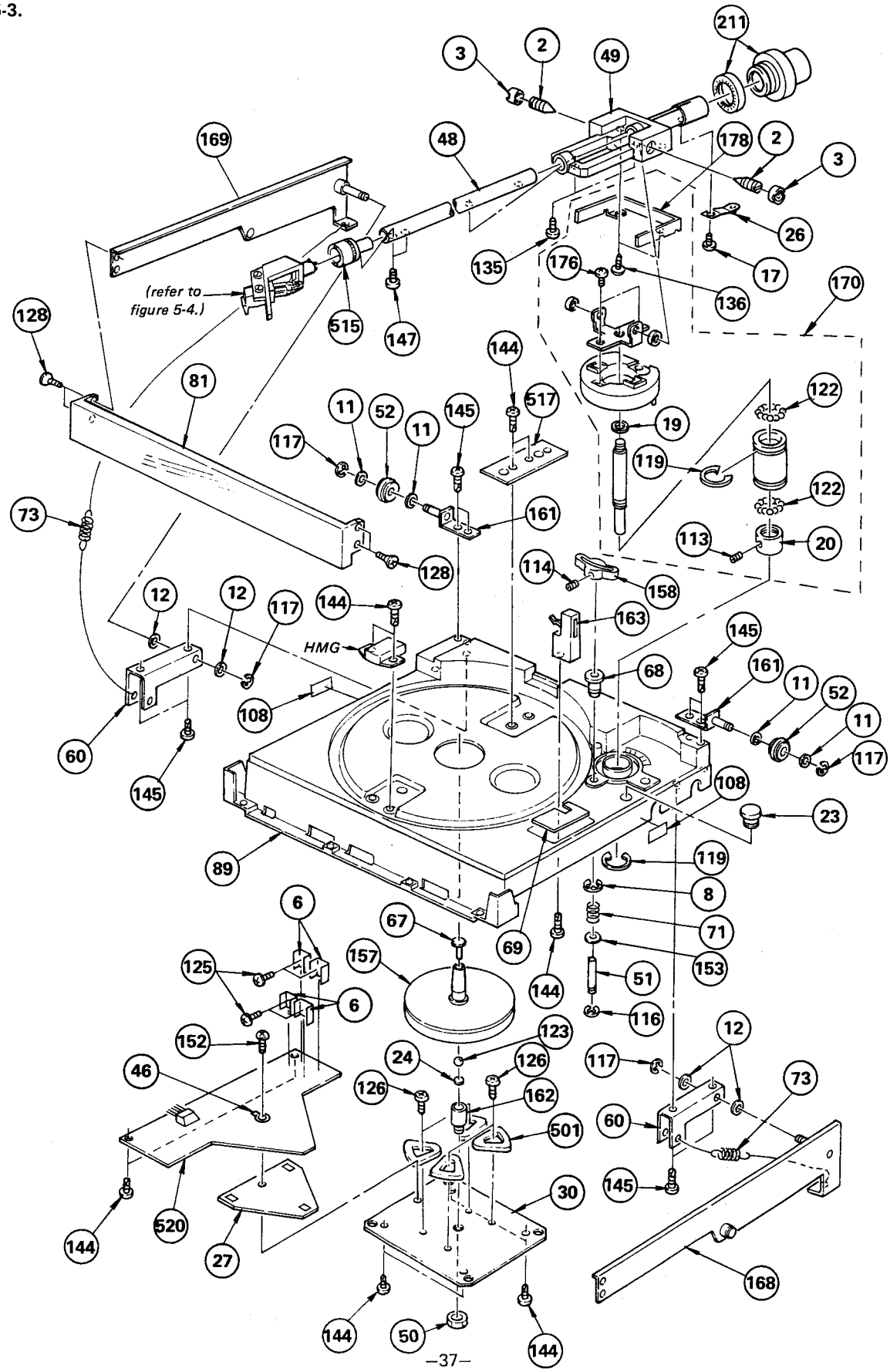
5-1.


86
138
64
76
155
182
18
76
18
87
130
131
130
90
66
120
180
92
172
93
63
100
62
149
107
91
167
150
152
99
4
150
150
150
177
167
152
150
149
149
109
150
150
182
208 x 4
203 x 4

5-2.


529
528
508
183
15
509
102
105
129
174
T101
140
181
527
149
133
1
95
111
151
150
174
129
516
525
98
531
101
84
155
207
150
151
70
206
151
150
103
83
128
117
75
129
106
58
521
154
142
110
137
522
171
130
154
104
117
151
58
75
128
82

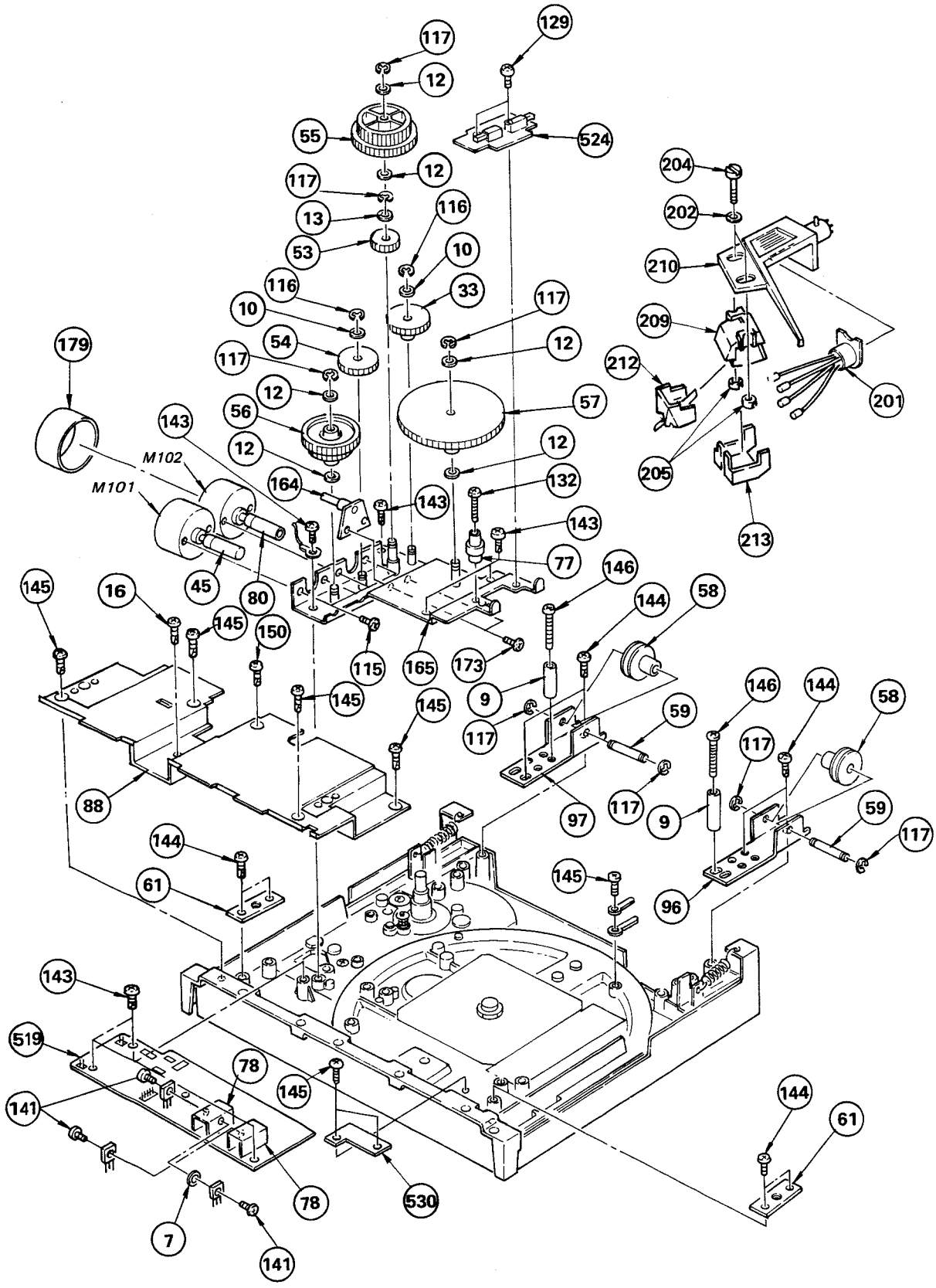
5-3.



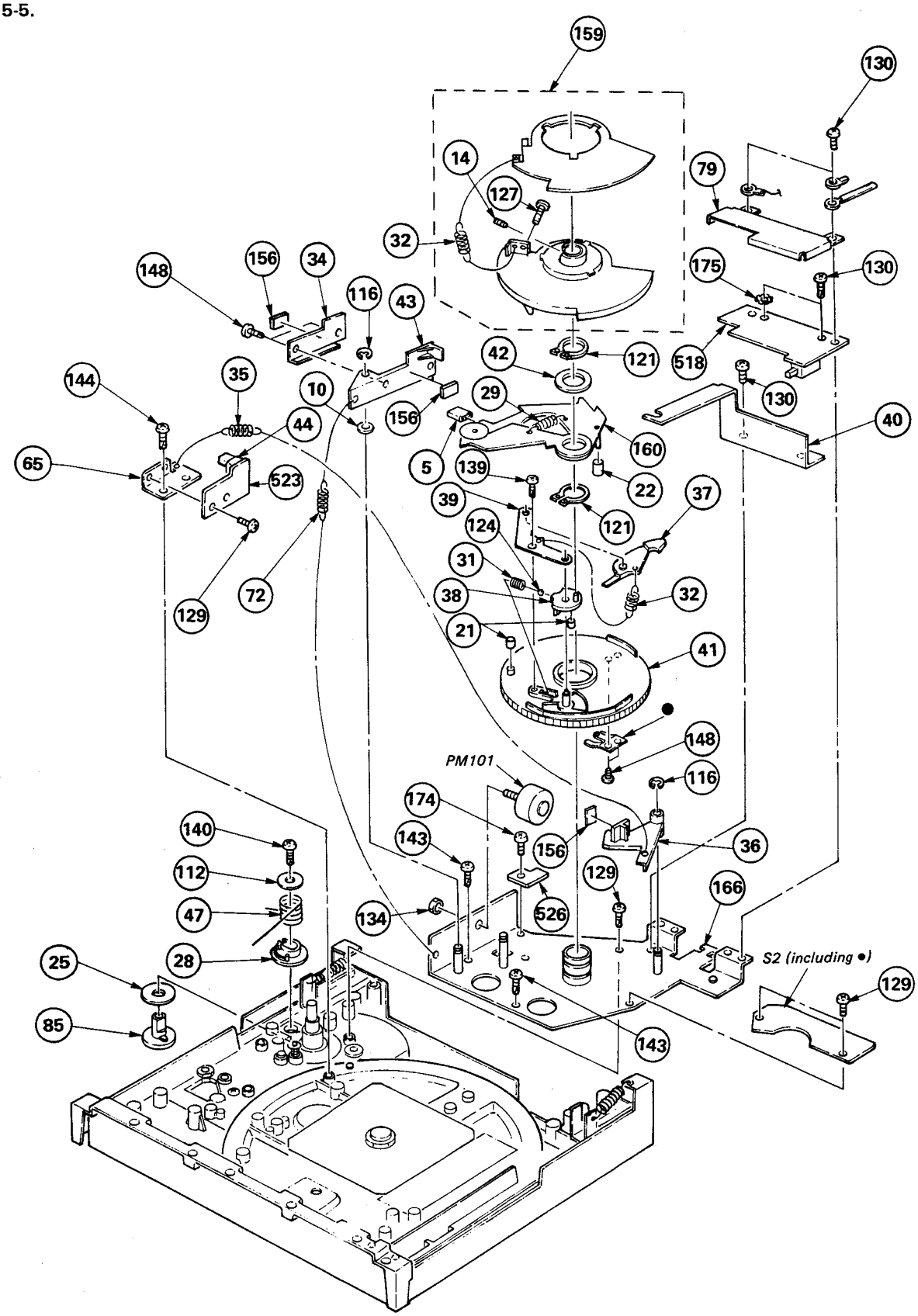
A B C D

1 2 3 4 5

5-4.



5-5.


159
130
14
79
127
32
148
156
34
116
43
175
130
518
42
121
144
35
10
29
130
40
44
156
160
65
523
5
139
22
39
37
124
121
31
72
129
38
32
21
41
148
PM101
116
174
143
156
36
140
112
129
166
47
134
526
25
28
S2 (including •)
129
85
143

S-FL3/FL3C

GENERAL SECTION

No.	Part No.	Description
1	♦;2-066-111-05	SUPPORT
2	2-203-518-61	SCREW, PIVOT
3	2-203-519-00	NUT (A), LOCK, PIVOT
4	♦;3-465-048-00	SHAFT
5	3-537-173-00	CUSHION
6	♦;3-567-737-00	HEAT SINK
7	3-572-365-01	SHEET (A), INSULATING
8	3-618-078-00	RING, RETAINING, CE TYPE
9	3-654-603-00	SPACER
10	3-701-439-11	WASHER
11	3-701-441-11	WASHER
12	3-701-441-21	WASHER
13	3-701-443-21	WASHER, 5
14	3-701-505-00	SET SCREW, DOUBLE POINT 3X3
15	3-701-682-00	(US,FL3C)....STOPPER, CORD
15	3-703-244-00	(AEP,UK).....STOPPER, CORD
16	3-703-136-00	SCREW, PTPWH 3X12
17	3-703-454-00	SCREW, TAPPING
18	4-820-330-21	SCREW, BW, PLUS MINUS
19	4-841-075-00	WASHER, UPPER
20	4-844-069-00	NUT (D), THRUST
21	4-847-035-00	TUBE, ABSORBER
22	♦;4-847-035-21	TUBE, ABSORBER
23	4-847-059-11	CAP, ADJUSTMENT HOLE
24	4-852-007-00	RETAINER (A), THRUST
25	4-853-042-00	WASHER
26	4-853-043-00	SPRING (B), GUIDE
27	4-857-642-00	HOLDER, PC BOARD
28	4-858-229-00	CAM, IFC
29	4-858-408-00	SPRING
30	♦;4-858-708-00	FRAME, MOTOR
31	4-862-640-00	SPRING, COMPRESSION
32	4-862-642-00	SPRING, TENSION
33	4-869-903-00	GEAR (A), MIDWAY
34	♦;4-869-906-00	PLATE (B), LOCK
35	4-869-911-00	SPRING, TENSION
36	4-869-915-00	LEVER, BRAKE
37	4-869-933-00	LIMITER (A)
38	4-869-934-00	LIMITER (B)
39	4-869-935-00	PLATE, LIMITER
40	♦;4-869-936-00	SUPPORT, PHONO LEAD
41	4-869-957-00	CAM, CONTROL
42	4-869-960-00	RETAINER, THRUST
43	4-869-963-00	PLATE, LOCK (A)
44	4-869-965-00	PLATE, SLIT
45	4-869-995-00	WORM

GENERAL SECTION

No.	Part No.	Description
46	4-870-539-00	PLATE, GROUND
47	4-874-250-00	SPRING
48	4-875-210-00	PIPE, ARM
49	4-875-218-00	JOINT (M), PIPE
50	4-876-394-00	NUT (M12), SERRATION
51	4-879-505-00	ROD, PUSH
52	4-879-509-00	ROLLER (A)
53	♦;4-879-512-00	GEAR (B), MIDWAY
54	♦;4-879-513-00	GEAR (C), MIDWAY
55	4-879-514-00	WHEEL (A), WORM
56	4-879-515-00	WHEEL (B), WORM
57	♦;4-879-516-00	GEAR, DRIVING
58	4-879-520-00	ROLLER (B)
59	♦;4-879-521-00	SHAFT, ROLLER (B)
60	♦;4-879-523-00	BRACKET, LIFTER, PANEL
61	♦;4-879-524-00	PLATE, FIXED
62	♦;4-879-530-00	PLATE, FUNCTION SWITCH
63	♦;4-879-531-00	PLATE, GUIDE
64	4-879-534-00	SCREW, FIXED
65	♦;4-879-535-00	BRACKET, END SENSOR
66	4-879-539-00	BASE, BUTTON SWITCH
67	♦;4-879-541-00	CAP, CENTER
68	4-879-543-00	CASE, ROD, PUSH
69	4-879-544-00	PLATE, ORNAMENTAL, REST
70	4-879-545-00	PROTECTOR (A)
71	4-879-563-00	SPRING, COMPRESSION
72	4-879-564-00	SPRING, TENSION
73	4-879-565-00	SPRING, TENSION
74	.....	
75	♦;4-879-566-00	SHAFT (C), ROLLER
76	4-879-567-00	SHEET, PROTECTION, GLASS
77	♦;4-879-568-00	GUIDE, RACK
78	♦;4-879-569-00	HEAT SINK
79	♦;4-879-570-00	CASE, SHIELD
80	4-879-571-00	WORM
81	4-879-574-00	PANEL, FRONT
82	4-879-575-00	ESCUTCHEON (RIGHT), SIDE PLATE
83	4-879-576-00	ESCUTCHEON (LEFT), SIDE PLATE
84	♦;4-879-579-00	REINFORCEMENT (B)
85	4-879-587-00	KNOB, IFC
86	4-879-590-00	GLASS, FRONT
87	4-879-591-00	PLATE, TOP
88	♦;4-879-592-01	(AEP,UK)....COVER
88	♦;4-879-592-12	(US,FL3C)...COVER
89	♦;4-879-600-00	FRAME
90	4-879-602-00	BUTTON, POWER

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

GENERAL SECTION

No.	Part No.	Description
91	4-879-615-11	LABEL, CAUTION, SERVICE
92	4-882-202-00	BUTTON (A), CONTROL
93	4-882-203-00	BUTTON, OPEN/CLOSE
94	.....	
95	4-882-206-00	(AEP).....LABEL, MODEL NUMBER
95	4-882-207-00	(UK).....LABEL, MODEL NUMBER
95	4-882-208-00	(US,FL3C)...LABEL, MODEL NUMBER
96 ♦	4-882-212-01	BRACKET, ROLLER (B)
97 ♦	4-882-212-11	BRACKET, ROLLER (B)
98 ♦	4-882-214-00	(UK,AEP)....PANEL, REAR
98 ♦	4-882-214-11	(US,FL3C)...PANEL, REAR
99 ♦	4-882-215-00	REINFORCEMENT (D)
100 ♦	4-882-216-00	PLATE, RACK
101	4-882-220-00	PANEL, TOP
102 ♦	4-882-221-00	REINFORCEMENT (C)
103	4-882-223-00	PLATE (LEFT), SIDE
104	4-882-224-00	PLATE (RIGHT), SIDE
105 ♦	4-882-225-00	(US,FL3C)...PLATE, REAR
105 ♦	4-882-225-11	(AEP,UK)....PLATE, REAR
106	4-882-226-00	COVER, PANEL
107 ♦	4-882-228-00	PLATE, BOTTOM
108	9-911-837-XX	CUSHION, PL
109 ♦	4-882-230-00	PLATE (F), FUNCTION SWITCH
110 ♦	4-882-231-00	CASE, SHIELD
111 ♦	4-882-232-00	HOOD, LAMP
112 ♦	4-882-237-00	RETAINER, IFC
113	7-621-712-17	SET-SCREW, SLOT 2.6X2 CUP POINT
114	7-621-734-09	SET-SCT, HEX. 2.6X3
115	7-621-775-00	SCREW +B 2.6X3
116	7-624-104-04	STOP RING 2.0, TYPE -E
117	7-624-106-04	STOP RING 3.0, TYPE -E
118	.....	
119	7-624-133-84	STOP RING 14, TYPE-CE
120 ♦	4-847-035-31	TUBE, ABSORBER
121	7-624-197-31	STOP RING 16, TYPE-C
122	7-671-151-01	STAINLESS, BALL 1/16INCH
123	7-671-152-01	STENLESS BALL
124	7-671-155-01	STEEL BALL 3.0
125	7-682-147-01	SCREW +P 3X6
126	7-682-147-13	SCREW +P 3X6
127	7-682-150-13	SCREW +P 3X14
128	7-682-245-04	SCREW +K 3X4
129	7-682-545-09	SCREW +B 3X4
130	7-682-547-04	SCREW +B 3X6
131	7-682-551-04	SCREW +B 3X14
132	7-682-553-09	SCREW +B 3X20

GENERAL SECTION

No.	Part No.	Description
133	7-682-947-01	SCREW +PSW 3X6
134	7-684-023-04	N 3, TYPE 2
135	7-685-533-14	SCREW +BTP 2.6X6 TYPE2 N-S
136	7-685-105-24	SCREW +P 2X8 TYPE2 SLIT
137	7-685-133-11	SCREW +PTP 2.6X6 TYPE2 SLIT
138	9-911-837-XX	CUSHION
139	7-685-533-21	SCREW +BTP 2.6X6 TYPE2 SLIT
140	7-685-545-21	SCREW +BTP 3X6 TYPE2 SLIT
141	7-685-645-71	SCREW +BVTP 3X6 TYPE2 SLIT
142	7-685-646-21	SCREW +BVTP 3X8 TYPE2 SLIT
143	7-685-646-29	SCREW +BVTP 3X8 TYPE2 SLIT
144	7-685-647-29	SCREW +BVTP 3X10 TYPE2 SLIT
145	7-685-647-71	SCREW +BVTP 3X10 TYPE2 SLIT
146	7-685-651-21	SCREW +BVTP 3X20 TYPE1
147	7-685-772-04	SCREW +PTT 1.7X2, TYPE1
148	7-685-799-74	SCREW +PTT 1.7X3
149	7-685-870-01	SCREW +BVTT 3X5 (S)
150	7-685-871-01	SCREW +BVTT 3X6 (S)
151	7-685-871-04	SCREW +BVTT 3X6 (S)
152	7-685-872-01	SCREW +BVTT 3X8 (S)
153	7-688-003-11	W 3, MIDDLE
154	9-911-841-XX	CUSHION
155	9-911-841-XX	CUSHION
156	9-911-850-XX	FELT, BRAKE
157	A-4608-204-A	MAGNET ASSY
158	A-4637-053-A	PLATE ASSY, LIFTER
159	X-4869-906-0	DRUM ASSY, BRAKE
160	X-4869-908-0	LEVER ASSY, LEAD-IN
161 ♦	X-4879-501-0	BRACKET ASSY, ROLLER (A)
162	X-4879-503-0	BEARING ASSY, MOTOR
163	X-4879-505-0	REST ASSY, ARM
164 ♦	X-4879-506-0	PIN ASSY, GUIDE
165 ♦	X-4879-508-0	CHASSIS ASSY, MOTOR FITTING
166 ♦	X-4879-509-0	CHASSIS ASSY, MECHANICAL
167	4-882-235-00	FOOT
168	X-4882-202-0	LIFTER (RIGHT) ASSY, PANEL
169	X-4882-203-0	LIFTER (LEFT) ASSY, PANEL
170	X-4882-204-1	ROTARY BOSS ASSY
171	X-4882-205-1	(US,FL3C)...PANEL ASSY, FUNCTION
171	X-4882-205-2	(UK,AEP)....PANEL ASSY, FUNCTION
172	X-4882-206-1	BUTTON ASSY, START/STOP
173	7-682-545-01	+B 3X4
174	7-682-545-04	+B 3X4
175	7-623-422-07	LW 3, TYPE B
176	7-685-103-21	SCREW +P 2X5 TYPE2 SLIT
177	3-703-137-00	SCREW, TAPPING

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

-FL3/FL3C

GENERAL SECTION

No.	Part No.	Description
178	♣;4-881-628-00	REINFORCEMENT (A)
179	♣;4-882-233-00	CASE, ACOUSTIC ABSORBER
180	♣;3-701-690-00	(UK).....LABEL (MADE IN JAPAN)
181	3-703-043-21	(AEP,UK)....LABEL, MAIN CAUTION
181	3-703-114-01	(US,FL3C)...LABEL, MAIN CAUTION
182	3-703-079-21	(US,FL3C)...LABEL, SUB-CAUTION
183	3-703-396-01	(UK).....LABEL, CAUTION

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
201	1-555-463-00	CONNECTOR, WITH LEAD
202	2-229-507-00	(AEP,UK,FL3C)...WASHER, CARTRIDGE
203	4-808-459-61	SCREW, TRANSPORT
204	2-056-532-00	(FL3C)...SCREW(A), CARTRIDGE
204	4-815-654-00	(AEP,UK)....SCREW, CARTRIDGE
205	4-815-655-01	(AEP,UK,FL3C)...NUT, CARTRIDGE
206	4-879-596-00	TURNTABLE
207	4-879-597-01	(AEP,UK)....SHEET, TURNTABLE
207	4-879-597-11	(US,FL3C)...SHEET, TURNTABLE
208	4-882-204-00	PLATE, LOCK, TRANSPORT
209	1-549-105-00	(FL3C)....CARTRIDGE COMPLETE ASSY, VL-5
209	A-4505-065-A	(AEP,UK)..CARTRIDGE COMPLETE ASSY, XL-20G
210	X-4869-912-0	SHEEL ASSY, HEAD
211	X-4874-214-0	WEIGHT ASSY, MAIN
212	A-4587-058-A	(FL3C).....STYLUS, ND-5G
212	A-4587-061-A	(AEP,UK)...STYLUS, ND-200G
213	2-330-163-00	(AEP,UK)...COVER, STYLUS
213	2-330-315-00	(FL3C).....COVER, STYLUS
	3-701-616-00	BAG, POLYETHYLENE, FOR MAIN WEIGHT, HEAD SHEEL, DP ADJUSTOR
	3-701-630-00	BAG, POLYETHYLENE, FOR INSTRUCTION MANUAL
	3-701-634-00	BAG, POLYETHYLENE, FOR TURNTABLE
	3-701-806-00	ADAPTOR, 45, (E)
	3-783-921-11	(AEP,UK).....MANUAL, INSTRUCTION
	3-783-921-21	(US,FL3C)....MANUAL, INSTRUCTION
	3-783-921-41	(AEP).....MANUAL, INSTRUCTION
	4-862-043-11	CUSHION, ARM
	4-869-959-00	PLATE, LIGHT INTERCEPTION
	4-869-962-00	ADJUSTOR, DP
	4-879-606-00	STOPPER, L
	4-879-620-00	BAG, PROTECTION, FOR SET
	4-881-671-00	CUSHION, TURNTABLE
	4-882-238-00	PLATE, PROTECTION
	4-882-239-01	CUSHION, LOWER
	4-882-240-01	CUSHION, UPPER, LEFT
	4-882-241-01	CUSHION, UPPER, RIGHT
	4-882-242-00	INDIVIDUAL CARTON
	4-882-244-00	HOLDER, TT
	X-4869-915-0	(US)...SCREW ASSY, FITTING, CARTRIDGE

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
501	1-462-161-00	COIL, MOTOR			
502	♣;1-508-878-00	BASE POST			
503	♣;1-535-115-00	TERMINAL			
504	♣;1-535-116-00	TERMINAL			
505	♣;1-535-117-00	TERMINAL			
506	♣;1-535-118-00	TERMINAL			
507	♣;1-535-141-00	BASE POST 19MM (10MM PITCH) 4P			
508	⚠1-534-986-XX	(US,FL3C)...CORD, POWER			
509	1-556-242-00	(AEP,UK)....CORD, CONNECTION			
509	1-556-242-21	(US,FL3C)...CORD, CONNECTION			
510	♣;1-560-555-00	PIN, CONNECTOR 2P			
511	♣;1-560-602-00	PIN, CONNECTOR 3P			
512	♣;1-560-604-00	PIN, CONNECTOR 5P			
513	♣;1-560-605-00	PIN, CONNECTOR 6P			
514	♣;1-560-709-00	PIN, CONNECTOR 8P			
515	1-561-551-00	CONNECTOR, NECK CYLINDER (M)			
516	♣;1-607-024-00	PC BOARD, POWER SUPPLY			
517	♣;1-607-026-00	PC BOARD, RECORD SENSOR (B)			
518	♣;1-607-028-00	PC BOARD, PHONO			
519	♣;A-4619-180-A	MOUNTED PCB, SERVO			
520	♣;1-607-030-00	PC BOARD, MOTOR			
521	♣;1-607-031-00	PC BOARD, CONTROL (A)			
522	♣;1-607-032-00	PC BOARD, CONTROL (B)			
523	♣;1-607-033-00	PC BOARD, INTERRUPTER			
524	♣;1-607-034-00	PC BOARD, SWITCH			
525	♣;1-607-035-00	PC BOARD, JACK			
526	♣;1-607-036-00	PC BOARD, RELAY			
527	♣;1-607-025-00	PC BOARD, RECORD SENSOR (A)			
528	⚠1-534-817-XX	(AEP)...CORD, POWER			
529	⚠1-551-884-00	(UK)....CORD, POWER			
530	♣;1-608-096-00	(US,FL3C)..PC BOARD, REMOTE CONTROL			
531	♣;1-608-097-00	(US,FL3C)..PC BOARD, REMOTE CONTROL RELAY			
532	♣;1-535-119-00	TERMINAL			
533	♣;1-508-994-00	(US,FL3C)...PIN, CONNECTOR			
C1	⚠1-123-508-00	ELECT	1000MF	20%	35V
C2	⚠1-123-508-00	ELECT	1000MF	20%	35V
C107	1-130-307-00	FILM	0.027MF	5%	100V
D101	⚠8-719-200-02	DIODE 10E2			
D102	⚠8-719-200-02	DIODE 10E2			
D103	⚠8-719-200-02	DIODE 10E2			
D104	⚠8-719-200-02	DIODE 10E2			
D105	8-719-936-06	DIODE EQA01-06R			
D106	8-719-936-06	DIODE EQA01-06R			
D107	8-719-815-55	DIODE 1S1555			
D108	8-719-200-02	DIODE 10E2			
D301	8-719-101-11	DIODE SR110			

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♣ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D502	8-719-901-31	DIODE SLP131B
D601	8-719-812-33	DIODE TLG123
D602	8-719-900-41	DIODE SLP141B
D603	8-719-900-41	DIODE SLP141B
D604	8-719-900-41	DIODE SLP141B
D605	8-719-900-41	DIODE SLP141B
D606	8-719-900-41	DIODE SLP141B
D607	8-719-900-41	DIODE SLP141B
H1	8-719-903-00	DIODE HL-300C
H2	8-719-903-00	DIODE HL-300C
HMG	1-543-167-00	HEAD (TURN DETECTION)
IC101	8-759-155-58	IC UPC4558CK
IC102	8-759-155-58	IC UPC4558CK
IC103	8-759-800-13	IC LM6405A067
IC104	8-759-602-65	IC CX065B
IC201	8-759-155-58	IC UPC4558CK
J101	1-507-688-21	JACK (STEREO PLUG)
L101	1-407-177-XX	MICRO INDUCTOR 470UH
L102	1-408-104-00	MICRO INDUCTOR 1MMH
M101	1-541-163-00	MOTOR
M102	1-541-163-00	MOTOR
PL1	1-518-470-00	LAMP, PILOT
PM101	1-454-297-00	SOLENOID, PLUNGER
Q101	8-729-612-77	TRANSISTOR 2SA1027R
Q102	8-729-180-93	TRANSISTOR 2SD809
Q103	8-729-663-47	TRANSISTOR 2SC1364
Q104	8-729-180-93	TRANSISTOR 2SD809
Q105	8-729-612-77	TRANSISTOR 2SA1027R
Q106	8-729-602-67	TRANSISTOR 2SA1026-7
Q107	8-729-612-77	TRANSISTOR 2SA1027R
Q108	8-729-612-77	TRANSISTOR 2SA1027R
Q109	8-729-663-47	TRANSISTOR 2SC1364
Q110	8-729-663-47	TRANSISTOR 2SC1364
Q111	8-729-663-47	TRANSISTOR 2SC1364
Q112	8-729-612-77	TRANSISTOR 2SA1027R
Q113	8-729-612-77	TRANSISTOR 2SA1027R
Q114	8-729-177-43	TRANSISTOR 2SD774
Q115	8-729-177-43	TRANSISTOR 2SD774
Q116	8-729-180-93	TRANSISTOR 2SD809
Q117	8-729-173-13	TRANSISTOR 2SB731
Q118	8-729-180-93	TRANSISTOR 2SD809

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q119	8-729-173-13	TRANSISTOR 2SB731			
Q120	8-729-663-47	TRANSISTOR 2SC1364			
Q201	8-729-180-93	TRANSISTOR 2SD809			
Q202	8-729-173-13	TRANSISTOR 2SB731			
Q203	8-729-180-93	TRANSISTOR 2SD809			
Q204	8-729-173-13	TRANSISTOR 2SB731			
Q301	8-729-101-13	TRANSISTOR PH103			
Q401	8-729-101-01	TRANSISTOR PH101			
Q402	8-729-101-01	TRANSISTOR PH101			
Q701	8-729-663-47	TRANSISTOR 2SC1364			
Q702	8-729-663-47	TRANSISTOR 2SC1364			
Q703	8-729-663-47	TRANSISTOR 2SC1364			
R1	⚠ 1-246-497-00	CARBON	10K	5%	1/4W
R2	⚠ 1-246-497-00	CARBON	10K	5%	1/4W
R103	⚠ 1-217-397-00	FUSIBLE	68	5%	1/4W F
R104	⚠ 1-217-393-00	FUSIBLE	33	5%	1/4W F
R116	1-214-779-00	METAL FILM	120K	1%	1/4W
R154	⚠ 1-217-397-00	FUSIBLE	68	5%	1/4W F
R155	⚠ 1-217-397-00	FUSIBLE	68	5%	1/4W F
R169	1-244-837-00	CARBON	33	5%	1/2W
R170	1-244-846-00	CARBON	75	5%	1/2W
R197	1-214-769-00	METAL FILM	47K	1%	1/4W
R801	1-246-759-00	CARBON	10		1/8W
R802	1-246-759-00	CARBON	10		1/8W
RV101	1-224-254-XX	RES, ADJ, METAL GLAZE 47K			
RV102	1-226-236-00	RES, ADJ, CARBON 10K			
RV201	1-226-236-00	RES, ADJ, CARBON 10K			
RV202	1-226-236-00	RES, ADJ, CARBON 10K			
RV203	1-226-239-00	RES, ADJ, CARBON 100K			
RV204	1-226-239-00	RES, ADJ, CARBON 100K			
S1	1-553-909-00	SWITCH, PUSH			
S2	1-553-320-00	SWITCH			
S3	1-552-532-00	SWITCH, PUSH			
S4	1-552-532-00	SWITCH, PUSH			
S5	1-553-856-00	SWITCH, KEY BOARD			
S6	1-552-412-00	SWITCH, KEY BOARD			
S7	1-552-412-00	SWITCH, KEY BOARD			
S8	1-552-412-00	SWITCH, KEY BOARD			
S9	1-552-412-00	SWITCH, KEY BOARD			
S10	1-553-321-00	SWITCH, PUSH			
T101	⚠ 1-447-322-00	(US,FL3C)...TRANSFORMER, POWER			
T101	⚠ 1-447-323-00	(AEP,UK)....TRANSFORMER, POWER			
X101	1-527-532-00	OSCILLATOR, CERAMIC			

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTROLYTIC CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.	50 VOLT. PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-415-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT. PART No.	160 VOLT. PART No.	250 VOLT. PART No.	350 VOLT. PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

RATING

CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

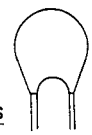
CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.	CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

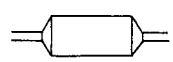


TANTALUM CAPACITORS

→: Use the high voltage rated one.

CAP. (μF)	RATING 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



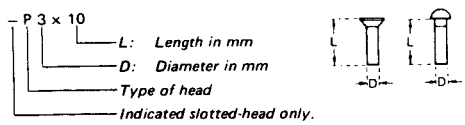
CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/4 WATT CARBON RESISTORS

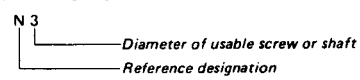
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	